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Retraction

Retracted: The Application of Traditional Chinese Woodcut Printmaking Language in Digital Painting Based on Intelligent Computing

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] C. Chen, "The Application of Traditional Chinese Woodcut Printmaking Language in Digital Painting Based on Intelligent Computing," *Journal of Sensors*, vol. 2022, Article ID 2223868, 12 pages, 2022.

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Research Article

The Application of Traditional Chinese Woodcut Printmaking Language in Digital Painting Based on Intelligent Computing

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With the passage of time, information technology has been implicitly embedded in people's lives, bringing an important impact on artists' creations. Modern painting technology is advanced, using electronic products, digital devices, electronic hand-painting tools, and other equipment to simulate the real texture of brush strokes to paint the style and effect the artist seeks. The integration of woodcut prints into digital painting has enriched the form of digital painting, and one of the characteristics of digital illustration is its fast dissemination, which is more powerful to promote the charm of traditional art. In the new era, with new technology, we consider whether we can combine the digital painting style, expression, woodcut language, and cultural connotation of ancient Chinese woodcut prints with digital technology and use new methods and forms to speak about the unique and essential attributes of ancient Chinese woodcut prints to be innovated and continued. The emotional motivation and the implicit, obscure connotations of the art of painting are not as far apart as they seem, although they are more like logical computerized counterparts. The continued development of artificial intelligence has made it possible for computers to create paintings independently. This paper explores a process flow model for digital painting based on intelligent computing and effectively incorporates the language of traditional Chinese woodcut printmaking while looking at future trends in this field.

1. Introduction

Woodcut printmaking is the main form of traditional Chinese printmaking. The development of traditional Chinese woodblock printmaking has gone through four main periods and more than 1000 years. With such a long span of time, traditional Chinese woodblock prints, although basically existing as prints, provided relevant technical support in restoring the style of paintings. The first period was the Tang dynasty. The earliest woodblock print found is the woodblock print of the title page of the Vajra Sutra, "Sayings," carved in 868 AD, which predates Dürer's print by 700 years and can be considered the first surviving print in the world. Buddhism developed during this period, and Buddhist figures were largely personified by popular acceptance and the influence of indigenous philosophies. The characteristics of woodcut prints in the use of line modeling and the sun-engraving technique in figure engraving played an important role in the presentation of religious figures and the propagation of Buddhist ideology objectively. The second period is the Song and Yuan dynasties. The important feature of woodcut prints in this period was to get rid of the situation of serving and relying on religion and to move towards secularization and closer connection with the life of the people. In addition, the downward movement of woodblock prints made the source of subject matter more extensive, very diverse, and technically sophisticated, and the emergence of vermilion and ink two-color overprint woodblock prints objectively promotes the traditional woodblock art into a period of prosperous development. The third period is the Ming dynasty. This period of woodcut prints develops momentum; the reason, due to social stability, economic prosperity and scientific and technological progress and the refinement of engraving technology, brought about changes in the technical processing of woodcut prints. For example, in the past, woodcut prints used a single line engraving method, but in the Ming Dynasty, there was a black-and-white contrast, in which we are familiar with the illustrations

in "The West Wing" and "Water Margin," representing the development of woodcut prints in this period. The fourth period was the Qing dynasty. Due to the book ban movement, the publishing industry was hit hard, and the publishing industry closely related to the woodcut prints was also affected. The more prominent phenomenon is the impact of woodblock prints; at the same time, the production of woodblock prints prevailed, not only the emergence of woodblock prints production centers, such as Weifang and Sichuan Mianzhu, but also a variety of print subject matter, which makes the traditional woodblock prints a stumble, until the modern era was replaced by the new prints.

Chinese prints have always been of great value, both in terms of content and expression, as well as in terms of technique and dissemination, and have subsequently expanded and developed in the field of art [1]. During the Ming and Qing dynasties, foreign missionaries came to China one after another, and when Matteo Ricci came to China, he used copperplate as a tool for spreading Christianity and employed a large number of Chinese to create prints, while in the Republic of China, woodblock prints continued to exist as a vehicle for spreading news [2]. In these times, the printmaking method was generally based on line engraving, combined with the perspective and chiaroscuro of western painting, which indirectly reflected the basic style of printmaking in these times [3]. In the new era, PS and digital prints have taken the development of printmaking to a new level in terms of creation and techniques, and digital printmaking has now become a part of contemporary painting expression [4].

Printmaking in China's status is quite high; 1100 years ago, prints from the earliest works such as "Vajra Paramita Sutra" appeared; due to the origin of printing in China, the Han dynasty engraved topography and other methods of replication of efficiency appeared; for the late engraving and printing to provide the conditions and reference methods, China from replica topography to the original woodcut prints, the Chinese with their own wisdom and culture makes woodcut prints in the field of art radiant bloom [5] (see Figure 1).

The art of Chinese woodcarving has a long history of history, literature, folklore, and aesthetics into one, recording the long history, culture, and folklore of China and expressing the people's strong desire for a better life [6]. In the development of Chinese civilization, China woodcut art itself has a popularity and reproducibility that no other art can replace. This paper summarizes and discusses the artistic language, culture, and aesthetic aspects of traditional China woodcarving art.

Facing today's technologically advanced society, the survival of printmaking faces certain challenges, and the production of woodcuts requires materials, space, color, and manpower [7]. For modern people, there is often a reluctance to put in much effort to realize a woodcut print. At the same time, we also find that the number of people who are willing or know how to appreciate woodcuts is decreasing [8]. In the digital age, the circulation of paper books and newspapers is slowly decreasing (along with the advent of cell phones and electronic devices dedicated to reading books), reducing the exposure of woodcuts even more. Publishers are gradually reducing the production of woodcut books because print is not popular and sales are not good. So woodblock prints are gradually fading out of the limelight [9].

Figure 1: Woodcut on wood surface.

The main purpose of this paper is to analyze the development of digital printmaking in the new era and to show the openness and innovation of the vision of printmaking in the new era, as well as the innovation in the subject matter, content, ideas, and expression methods of printmaking [10]. At the end of the 20th century, computers entered everyone's life and cameras changed from film to digital imaging, so digital image art has become one of the most important forms of artistic expression nowadays, and digital printmaking not only bridges the tradition in artistic creation but also can be expressed with the help of computer software technologies such as Photoshop, 3dsmax, and Corel Draw. In the 21st century, digital printmaking plays an important role in shaping new visual art forms and also makes the language of printmaking enter a new level of expression, and how to build "expressiveness" in the new digital printmaking is the question we need to think about now [11].

2. Related Work

Woodcut printmaking (Figure 2) refers to the use of tools to carve out reverse graphics on a wooden board and then the use of items with materials that can produce color such as ink and pigments, coated evenly printed on paper and finally presented to appreciate the art craft works. Prints mostly refer to woodblock prints; because of the scarcity of materials such as copper and iron types, there are also a few copper block prints with overlay color omission, and in modern times, screen printing has appeared [12]. But in times, due to the limitation of tools and materials, knife engraving and the combination of woodblock form a unique knife flavor and wood flavor.

In the information society, design has been integrated into all aspects of people's life, and part of the design also has a strong commercial nature, so people will call it commercial digital painting, which is collectively known as "commercial art painting." With the development of technology and the application of new technology, new methods,

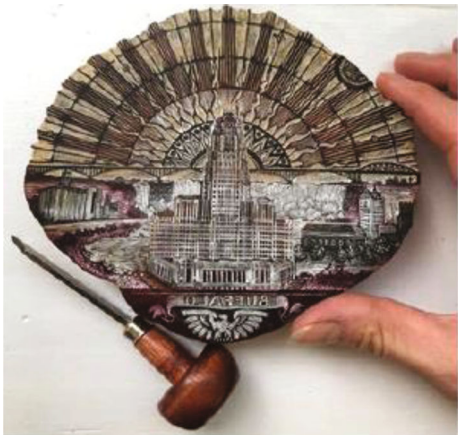

Figure 2: Woodcut prints.

and new means, painting is gradually transformed from hand-drawn on paper to computerized drawing, synthesis, processing, and so on. Computer painting, also known as digital painting, is highly efficient, modifiable, and infectious and has various methods of realization, which is more in line with the commercial rhythm of today's society and conveys a commercial culture [13].

Printmaking differs from the form of drawing not only with a pen on paper or textile but also requires a variety of materials to produce different digital painting effects, such as wood, stone, and silk screen. At least three steps (drawing, engraving, and printing) can produce more than two works with the same image, which is called printmaking [14]. The art of printmaking is spreading with the momentum of a star fire, and the art of woodcut not only enriches the art form but also enriches the content of books and magazines, increasing the readability of books and enriching people's cultural life with artistic aesthetics [15]. Moreover, China has a long history as the birthplace of printmaking, with the advent of movable type printing providing technical support, coupled with the increased interest in woodcut printmaking by our literati painters, who also physically joined in the innovation of conservation production [16]. In Figure 3, the texture of the vase is depicted directly by inputting vectors to the texture effect and the cyan color among the vase, shaping the sense of brokenness to reexperience new feelings. A branch inserted into the vase adds color nicely, rearranging and reorganizing the pattern on top of the cyan porcelain, and then, it is well integrated into the work, and the smoke and clouds in the sky are well combined with the vase. By jerking, stretching, or deliberately blurring, the cyan strip gradually becomes blurred from clear in the changing shape, further creating a mysterious atmosphere [17].

In Figure 4, by depicting the scene of workers hard at work digging a cave and by shaping and accumulating this texture of stones in the material from time to time, especially the bumpiness of the rocks dug out, the author embodies the workers' hard work day and night and expresses his praise for the workers' tireless work.

In Figure 5, the picture feels distant and tranquil and certainly gives people a quiet feeling. In the midst of the dark

Figure 3: Misty rain, such as sky green.

green sky, a group of ducks with spots are walking leisurely forward, and they are lined up in turn, with their heads held high showing the forward pursuit of beauty, and this carefree state of mind also affects the mood of the viewer.

The art of computerized digital painting based on intelligent computation dates back to the time before computers became widespread, when there was no artificial intelligence to assist, but relied on pure ideas [18]. A typical representative is fractal art, which follows strict mathematical rules to recursively and cyclically replicate patterns, while the final presentation is stunning [19]. Traditional rule-based system art includes a human concept, which is then generated by algorithmic rules, either starting from scratch or based on some material to begin visualization [20]. As in the case of the revolutionary painting algorithm by researchers at Nagoya University [21], this algorithm, after being given a digital painting with a style, gradually evolves them by cutting, stitching, flipping, and discarding images that are not needed in each evolution and do not fit the initial style, to end up with a surprising image work. During the creation process, the creator strictly enforces the algorithmic rules. With the popularity of computers and the rapid development of artificial intelligence, algorithmic art is usually used more often in digitally painted images generated through computer code.

More than a dozen genres of algorithm-based digital painting have been developed, including fractal art, genetic art, cellular automata, proceduralism, and transhumanist art [22]. It can be said that it is algorithm-based digital painting that brings computers and art together autonomously. The further development for algorithm-based digital painting is an attempt to transform the identity of the computer in the creation of art [23]. However, the existing technology is unable to construct an artificial intelligence equivalent to a human being for painting from top down.

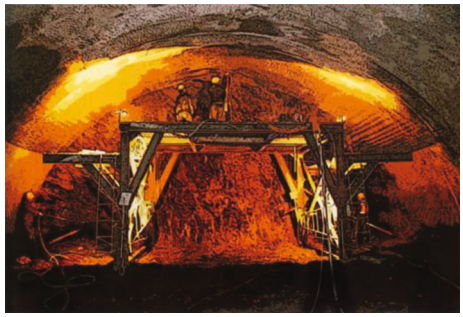

Figure 4: A sleepless night.

Figure 5: Free ducks.

Therefore, the existing attempts are based on bottom-up intelligent simulations of behavior. Algorithm-based digital painting is essentially the activity of using a computer as a tool to create art under the guidance of human intentions [24]. More ambitious attempts try to make the computer itself a painter, which requires the involvement of a higher level of intelligent computing, thus constituting a relatively independent computer-centered individual. There are two difficulties in the composition process: the first is how to achieve autonomous computer painting through intelligent computing; the second is the simulation of the painting intention.

3. Integration Application of Woodcut Printmaking and Digital Painting

3.1. A Framework for Digital Painting Based on Intelligent Computing. Leaving aside the level and intention of painting, the painting process is essentially an optimization process about how colors are manually assigned. Therefore, most of the digital painting features of smart painting programs are based on this principle. The difficulties in the implementation of this process lie in the image recognition capabilities of artificial intelligence, the construction of imagination, and the construction of the effects of uncertainty.

3.1.1. Imaginative Model Based on Intelligent Computing. Although the principle of imaginary model construction is simple, the difficulty lies in the algorithm design of image recognition and image reconstruction. Computer programs and the human brain are far apart in their ability to recognize images. The human brain can quickly recognize abstract shapes and symbols and generate images in a way that computers still struggle to do. People provide the AI with image information to perform image recognition and reconstruct the recognized elements to produce paintings. The principle of this imagery model based on intelligent computing is shown in Figure 6. Google is one of the most advanced experimenters in this field, with its "initialist" AI creating a set of 29 digital paintings that were auctioned in Los Angeles in 2016. The program is essentially a simulation of a human neural network—an artificial neural network. Here, "Initiationism" is aimed at learning a series of case studies from which new works of art can be created. This is essentially a process based on learning rules and connecting patterns of guesswork.

3.1.2. Emotional Model Construction Based on Intelligent Computing. The intelligent computing-based emotional model construction attempts to make the process of computer painting more random and emotional and thus closer to the unpredictability of the artist's painting creation. The approach used is based on an existing process with additional input of affective factors. Various forms of input can be used, such as for the capture of external signals or the generation of random influence signals through internal mechanisms. The principle is illustrated in Figure 7.

Examples of such are the interactive robotic drawing program published by Benjamin Grothe, which allows the ambient sounds around it (including dialogue sounds, background sounds) and its own mechanisms to have an effect on the drawing process. The real advantage of this approach is not as simple as just accepting random factors. When combined with big data mining techniques or the intentional input of information about a certain subject, it is able to complete paintings that humans cannot create. According to psychologist Carl Jung's theory, the vast repository of human cultural and artistic information contains the patterns and information codes of the collective human unconscious. By allowing a computer program to mine the data and output it in the form of a painting, the final work created would be a digital painting with collective unconscious visual symbols that are not available to humans by virtue of their individuality.

3.2. Generation of Digital Painting Intent Based on Intelligent Computing. The main principles that allow programs to generate creative purposes and intentions alone, free from human input, are currently being attempted in this area as follows.

3.2.1. Imaginative Modeling to Generate Painting Themes and Motives. The most wonderful part of the painting process is the imagination. If a computer is given an imaginative model, then the computer is able to generate imaginative results from this model. In this process, the human only provides the input material for the computer's imagination, the process of imagination is done by the computer, and the final output of the result is shown in the form of drawing. The process is shown in Figure 8.

The pioneer in this field was Harold Cohen, who started developing an intelligent computing-based digital painting

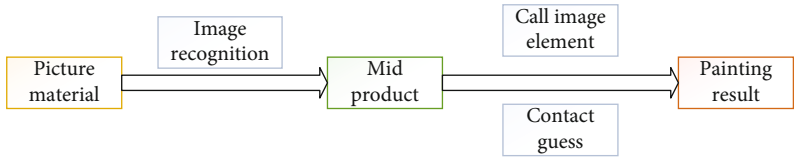

Figure 6: Digital painting model using intelligent computing.

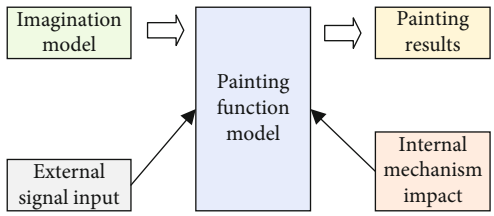

Figure 7: Painting function model for digital painting.

program called AARON in 1973. Through accumulated training, the AARON program's ability to paint digitally improved each year, and it began to simulate objects or people in the 1980s and to paint in color after the 1990s. At the same time, its paintings were exhibited and auctioned and collected by individuals and groups in various ways. AARON does not paint with pixels, but on a real canvas (AARON manages a physical painting machine through a painting function model, capable of mixing real paints and painting on real objects). During the development process, its imaginative model is constantly trained and reinforced. In this way, it can paint still life, portraits of people without receiving any reference image input, and has reached the level of children's painting. AARON's core design idea is to simulate the human brain's imagination, and its drawings are limited to its existing knowledge, driven by its limited imagination, without relying on any explicit artificial instructions.

3.2.2. Models That Enable Computers to Write Ideas and Thus Generate Creative Intent. This model is capable of collecting and discovering information autonomously to generate viewpoints and thus creative intent. Then based on the creative intention, and accompanied by the emotion model and imagination model, the painting is created. The principle is shown in Figure 9.

At the heart of this approach is the endowment of the ability to compose ideas, thus allowing the computer to generate painting themes and intentions on its own. A typical example of this type is The Painting Fool, an intelligent computational painting program created by Simon Colton, which is endowed with an imaginative power, an ability to articulate ideas, i.e., the ability to describe scenes and paint them with intent without any particular reference image. For example, the program downloads news about the war in Afghanistan, reads it, extracts keywords, finds images from the web on the subject, and then, in a painterly interpretation, makes an abstract collage of these images, presenting a fighter jet, an explosion, a family, an Afghan girl, and a war graveyard side by side. The designers opened an exhibition, "You Can't Know My Mind," in which "painting fools" read the first 10 stories in the British newspaper The Guardian and then painted portraits for visitors. If the software reads very negative emotional articles, it may refuse to paint. For the rest of the time, its digital painting is guided by the customer's special expressions or appropriate emotional adjectives. And at the end of the painting, it self-evaluates the work.

3.3. Integration of Traditional Printmaking and Modern Digital Painting

3.3.1. The Visual Elements of Woodcut Printmaking Are Introduced into Digital Painting. Excellent woodcut works often contain the subtleties of plane composition and color composition, such as the relationship between black and white and gray and the relationship between real and imaginary, in the paintings. It is also because these relationships together constitute the plane language of woodcut prints and ultimately through these plane language build a harmonious work of art on paper.

(1) Black and White Gray Relationship. For woodcut prints, especially monochrome woodcut prints, the color elements in the whole picture creation should be harmonious enough, for example, the heaviness embodied in the large surface, combined with various forms of dotted line surface techniques for gouging, so that after inking, not stained with ink, so that after the topography of the picture presents a blank to show the white part, thus forming a strong contrast between black and white. The gray surface is between the black surface with a finer knife marks to distinguish between the light and dark parts.

(2) The Relationship between Real and Imaginary. Void is often a white space, while the positive form, which exists with a clear graphic sense, is real, for example, in Figure 10, the Chinese printmaker Wang Qi's 1953 print "Selling Surplus," the white space in the lower left corner and the representation of the figure from near to far make the picture full of tension. At the same time, the correct use of the relationship between reality and fiction can form a spatial relationship between the picture elements to guide the viewer visually. Like an invisible navigation, it leads the viewer to appreciate the whole picture in an orderly way.

(3) Perspective Relationship. In woodcut prints, perspective relationship is not as obvious as other painting categories, and woodcut prints emphasize more on flat language, but there is no lack of excellent works that use perspective relationship to express large scenes. For example, in the work shown in Figure 11, by enlarging the farmland in the near

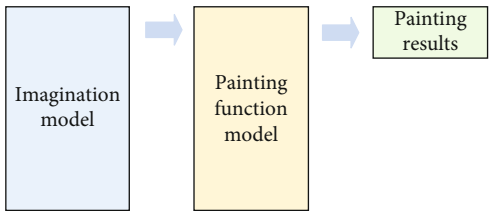

Figure 8: The process of digital painting with intelligent computing.

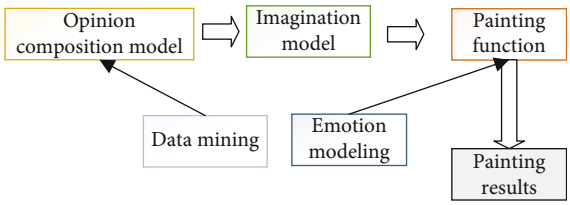

Figure 9: Creative painting model.

Figure 10: Selling the remaining food.

distance, regularizing it with lines, and then using the village under the mountain in the distance as the focus of perspective, the sense of space in the picture is satisfactorily expressed, and the whole work has a reasonable sense of order between feelings, making the woodcut quite interesting.

(4) Brush and Ink. In woodcut printmaking, brush and ink can also be understood as the artist's method of knife movement, that is, the angle and direction, force, and technique of knife movement. If we compare the techniques of Chinese painting, the inking of Chinese painters and the engraving of printmakers are in some ways compatible.

(5) Formal Language of Point, Line, and Surface. In the creation of wood carving, point, line, and surface are the picture of the painting language, which expresses the meridian relationship of the picture. The use of painting language is the skeleton of the artist's creation and the blood in the creation of engraving. The point, line, and surface of woodcut printmaking and their combination forms are mainly extracted from the point, line, and surface that constitute the constituent elements of woodcut works and decomposed into various forms to form unique visual effects with their own values and meanings, forming various combinations.

Figure 11: Raisen village.

In woodcut printmaking, dots, as the smallest unit of existence in the picture, can be arranged in different combinations to produce refreshing stylistic features. By using dots of different sizes and densities for different subjects, the rhythm and atmosphere of the prints can also be enhanced. For example, in Figure 12, "Fox in the Snow," the woodcut prints show a series of footprints left by a small fox in the snow in the distance in the form of "dots," which enliven the atmosphere of the whole picture. Everything in the world has its shape and outline, so the use of lines in the creation of woodcut prints is particularly important, in addition to the outline of specific forms, but also through the different curvature of the lines to express the artist's creative mood. And the surface is a generalized and summarized shape. In the process of woodcut creation, there are two ways to shape the surface: one is to express the outline form concretely, and the other is to express the relationship of the picture abstractly, so as to balance the artistic expression of the picture. In terms of expression, there are also two ways of shaping the surface: one is to leave a large area white and show the bright part by hollowing it out; the other is also to leave a large surface blank, which means not to do any creation on this side in order to leave a black side after the inking.

(6) Composition and Layout. Layout is the domination and control of the picture, which is also called "management of position" in the theory of the six methods of Chinese painting. The highest standard of woodcut prints is the coexistence of diversity and uniformity. What is too neat or too messy does not appeal to the viewer, and the general personality of human beings always prefers change in order and

Figure 12: The Fox in the Snow.

unity in change. Therefore, the so-called "unity in diversity" layout of woodcut prints is not only a special product of woodcut but also a return to people's nature.

The plane language of woodcut prints is reflected in different structures, showing different rhythms. The analysis of the graphic language of woodcut helps us understand the essence of art deeply and provides a methodological basis for the design practice of subsequent printmaking art.

3.3.2. The Possibility of Realizing Woodblock Print Elements in Digital Painting Creation. The development and progress of the times and the stability of social economy have ensured the colorful cultural life of people, and new artistic expressions are emerging, in terms of film and television (microfilm and small video) and photography (3D stereoscopic photography technology). In terms of fine arts (animation industry, 3D animation, and traditional Chinese art), digital painting has liberated the restraint of pen and paper for painting. Traditional art painting, or production, is done by repeatedly practicing works, drawing different artworks on paper or other bearers with the help of different digital painting materials, such as pencil, paint, water, brush, or the works printed by woodcut prints we are discussing today. All of them need the actual material to carry. The carrier of digital painting is the computer, which can realize different digital painting effects without the constraints and limitations of real materials; digital painting has created a new chapter of art. Nowadays, digital painting can not only simulate different brushstroke effects and painting styles but also achieve 3D effects that cannot be achieved by traditional painting, except for 2D effects, as long as the digital board is manipulated and practiced more, and the digital painting effects simulated by the computer can be mastered to the fullest.

Figure 13: Hand-drawn printmaking.

Digital painting can produce works in a variety of fields, line, block, abstract, real, monochrome, and multicolor; digital painting can achieve the artistic effect that people want.

Although there are differences between digital painting and traditional art, there are many aspects of traditional art that can be learned from the creation process before and after, such as observing the surrounding area, selecting the subject and then deciding on the materials to be used, and then starting to conceptualize the composition. In the final art work, the traditional method requires the use of various materials, paper, gouache, watercolor, ink, etc., to complete the final work, while digital painting only requires the use of a computer and mouse; hand-drawn version can be drawn close to the real painting style than the light and translucent sense of ethereal, brushwork slim and simple, woodcut prints knife taste and sense of volume, airbrush sense of grain, and other works. Digital works are convenient, efficient, and reproducible, but there are two sides to everything; digital painting is not able to restore 100% of the real sense in the realization, but technology will continue to develop; I believe digital painting will continue to improve the function (see Figure 13).

4. Case Study

This section mainly explores the application process of printmaking language in digital painting through the complete creation process, taking the creation process of a work as an example.

4.1. Collection and Creation of Material. First, the creators conceived the idea of creating the relationship between human beings and nature, which is a very broad subject matter with various expressions. In particular, in today's

Figure 14: Accumulation of creative materials.

Figure 15: Some ideas.

painting, artists are creating paintings that express the spirit of the times and the new customs and national spirit of the day. During creators' continuous study and practice, creators analyzed and deepened creators' understanding of "man and nature" several times and began to collect a series of materials, as shown in Figure 14.

In the formal law of woodcut printmaking, symmetry and balance are two ways to create a sense of picture.

Symmetry is balance in the strict sense, requiring a high degree of consistency in shape and volume, while equilibrium, as opposed to symmetry, refers to the universal balance of all asymmetries, which is not as strict as symmetry and can be different in volume and shape but needs to be balanced in visual psychology. Equilibrium is the grasp of the overall mood. While emphasizing the formal beauty and spatial picture effect, the language of woodcut printmaking also needs to take the overall tonality, color contrast, sparseness and rhythm, morphological changes, and texture direction into consideration. Thinking holistically is the key to creating a balanced picture, so that the picture presented

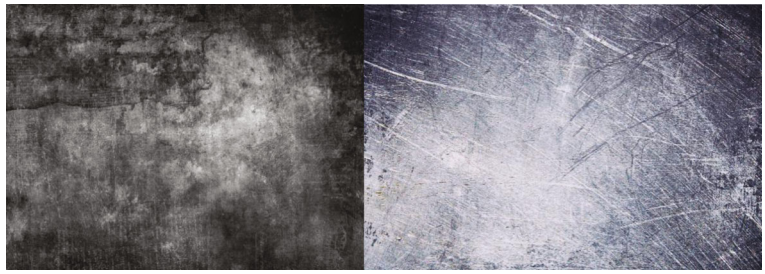

Figure 16: Photoshop under a special filter to create the texture effect try.

Figure 17: Copy of woodcut prints.

is rich in comprehensive beauty and has more personal characteristics. At the same time, the premise of equilibrium is the destruction of symmetry, and only when complete symmetry is destroyed can change be formed. In the composition of prints, symmetry and balance each have their own charm and can be used appropriately according to the needs of the picture.

4.2. Application and Experimentation of Printmaking Language: "Eternal Dreams" Digital Plate Making and Output. Based on the accumulation of creative materials in the early stage, creators started to select and organize the collected materials. Creator then tried to think about the composition in Photoshop and designed it repeatedly, with different compositions expressing different feelings, and the people, the natural environment, and even the animals themselves represent the main character and their relationship in the picture, as in Figure 15.

The works of Dali, Magritte, and other surrealist masters brought creators great inspiration, and after analyzing, studying, and learning from their works, creators' creative ideas were further inspired and expanded. Since digital painting is very convenient and easy to modify, after determining the size of the picture, the whole process of printmaking is drawn in computer software using a digital board, combining seemingly unrelated things, adding the grotesqueness and absurdity of creators' inner world, and expressing some dreamy worlds in creators' subconscious.

So, in conclusion, only through a lot of creative experiments can creators find a digital painting language and method that matches the artistic effect and thoughts and feelings creators want to express. In addition to using digital media such as digital cameras and scanners to scan hand-painted watercolor textures and oil textures into the corresponding software for adjustment and testing, creators also used the brush and special filter functions in the software to conduct various experiments. In the process of these experiments, creators referred to and combined the artistic characteristics of traditional prints, such as the grainy effect of lithography, the delicate black tone of Melodyn, and the flying dust effect of copperplate, and applied the artistic language characteristics of traditional prints to digital prints, and finally found creators' own personal digital painting language and concluded a suitable plate making method, as in Figure 16.

After deciding what kind of digital painting to use, creators decided to mainly use Photoshop for digital painting. This layer is the key layer that determines the overall tone of the image. After rendering several times with special filters, a gray and black grainy effect is obtained, and in subsequent image input and editing programs, all kinds of image elements are processed according to this tone.

Figure 18: Digital painting inspired by Chinese print.

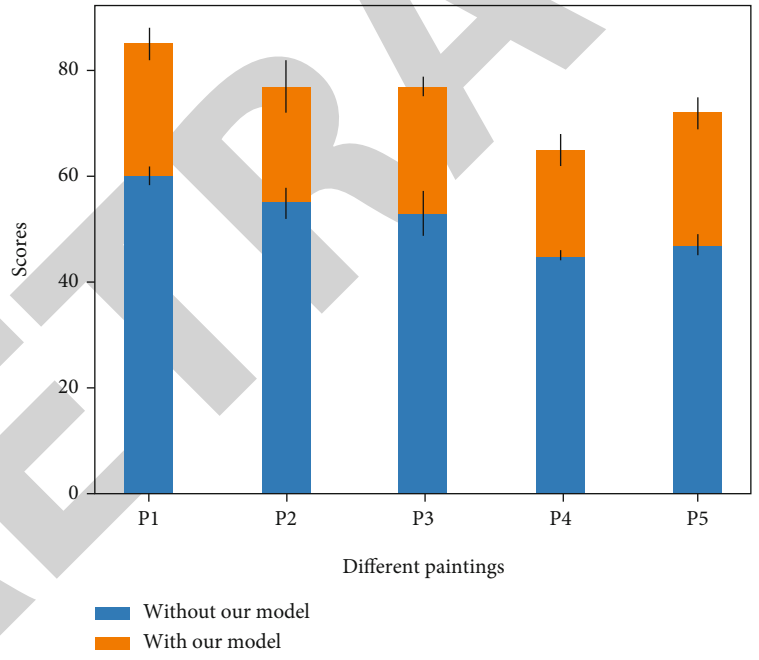

Figure 19: Quality comparison of digital paintings.

As mentioned above, image material can be obtained by digital camera, scanner, or 3dsmax software for 3D construction and rendering. In the creator's creation, the creator mainly uses a Canon digital camera to capture image material and uses Sdsmax to create some special effects. After the images are imported, they are then edited to achieve certain artistic effects. Based on the design, the selected image elements are placed on different layers so that when we edit the elements in one layer, it will not affect other elements. Depending on the overall needs of the image, different artistic treatments will be applied to different elements.

Finally, the content of all the layers will be integrated and adjusted to finalize the plate. The output of digital prints is usually made by professional digital printers or color inkjet printers, and creators chose raw rice paper as the substrate after experimentation. The images produced by computer printmaking are generally in RGB mode, but the printing mode is often in CMYK mode, so if the work is output directly, it will lead to serious distortion and major changes

in color tone. Therefore, before outputting the work, you need to make some adjustments to the master image, convert the RGB mode to CMYK mode, and then adjust the color tone to make sure there is no error.

4.3. Analysis. Chinese woodblock prints are not only a bright pearl in the history of Chinese art but also have an underestimated artistic and research value in the world. In this paper, we try to fuse digital painting with traditional Chinese prints and depict a set of handmade prints as well as digital prints with the small city of China as the big background. The traditional prints are made of linden wood, which is one of the common woodcut prints, using triangular knife, round knife, and flat knife, as shown in Figure 17.

Figure 18 mainly shows the customs of small towns in China. Because most of the production of Chinese prints is humanistic, people will add their yearning life content to the prints. In addition to the influence of Chinese Confucian culture, the works show "tranquility." Some works also express the beauty of inheritance of Chinese handicrafts and the beauty of family cultural system.

We evaluated the score of digital painting after our model drawing. The specific results are shown in Figure 19. A total of 5 works were compared, and the scores of the works with and without our model were compared. It can be seen that our model has obvious advantages.

5. Conclusion

With the rapid development of modern society and the rhythm of global cultural integration, art forms are diverse and the pace of innovation is accelerating. Both the development of woodcut printmaking and illustration design need to seek more diversified forms, and the mutual integration of the two is a good way to do so. In this paper, through an in-depth analysis of the language of woodcut printmaking, we break it down into basic language, formal laws, and aesthetic features and use theoretical research to guide design practice, which also makes printmaking design more inclusive and interdisciplinary. Computers are endowed with algorithm-based thinking patterns and image recognition functions that can be as diverse as painters and capable of creating digital paintings. There is still a lot of room for the language of woodcut printmaking in design, a kind of exploration based on practice to make a more cutting-edge style in the self-innovation of traditional art forms. We can only move forward in different attempts to make visual art design continue to create more value.

Data Availability

The experimental data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The author declared that there are no conflicts of interest regarding this work.

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