

Adoption of Chinese ink painting elements in modern poster design inspired by innovation research on physical and chemical reactions

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With the development of modern art, the application of Chinese ink painting elements in modern poster design is gradually developing. We study here the application of ink painting elements in poster designs using collaborative fusion method in detail. Results show that innovative as well as creative ideas determine the best place to fuse ink painting elements and poster designs, thus creating design innovation from the fusion of arts and physics (or chemistry). The results provide the theoretical foundation for the progression of traditional Chinese culture and the redevelopment of poster design.

Keywords: Collaborative fusion, ink painting elements, modern art, poster design.

POSTER design is an invention and manifestation of artistic form. Along with frequent artistic exchanges between countries and regions, poster design includes various ethnic features and exhibits a trend toward diversification. Art is deeply rooted in culture. Chinese traditional culture, with its unique profundity, has given birth to distinct local features during its evolution, in which Chinese ink painting occupies an important status. The introduction of traditional artistic elements through a skillful utilization of Chinese ink painting in modern art design is a heatedly discussed topic.

A considerable number of theoretical achievements in the practice of Chinese ink painting or poster design have been recognized. However, only a few systematic studies have been conducted on the application of Chinese ink painting elements in poster design, not to mention the integrated discussions on the two topics. Mitchell¹ integrated a lively theoretical elaboration and textual analysis in pointing out the new direction of the so-called iconographical turn. A solid foundation was laid down for the emerging visual culture study. Mirzoeff² discussed the general importance of visual culture in graphic design. Li³ considered posters as a beautiful language that reflected the ethnic tradition and social culture of a country, not just something that attracted attention. Rogoff⁴ described the characteristics of visual culture study as a research topic centred on a specific visual work or visual elements of a work. The individuality and aesthetic features of any work are extracted from the symbolized image. Cultural meaning is interpreted based on the aesthetic

values of the work itself, combined with the spiritual experiences through hearing and space perception. Zhong⁵ carried out an exposition on the visual genesis of Chinese and Western traditional painting language, definition and logic positioning of Chinese ink painting, characteristics of Chinese ink painting as a language, and artistic invention in Chinese ink painting. Lin⁶ has provided a review of the literature on Chinese ink painting in the 21st century and discussed the relationship between painting skills and the traditional painting system, as well as the relationship among nature, colour and painting tools. The historical evolution of painting skills, with respect to conception, morphology, function, and status has been analysed. Jin⁷ used a large number of typical and vivid examples to present a comprehensive and detailed discussion on the principle and practice of design. He discussed the issues of different styles, forms and norms of design, and proper use of these styles. Bao *et al.*⁸ made a preliminary discussion on the use of Chinese ink painting elements in poster design to bridge the gap between traditional and modern art. Kuang⁹ proposed the idea of expanding the modern dimension of Chinese ink painting. As the value and vitality of art lie in its creation, artists should constantly create new aesthetic styles for the public. Most of the relevant literature provides only a general introduction of Chinese ink painting, or discusses water and ink using concrete works of water-colour painting and calligraphy. These studies do not touch upon the inheritance and use of Chinese ink painting elements in poster design. Sadly, most of them are merely the accumulation and representation of facts; therefore, more effort needs to be exerted on the implication and connotation of Chinese ink painting. The spirit of applying Chinese ink painting elements in poster

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design seldom becomes the topic of research. Furthermore, most poster design works blindly adopt the Western artistic styles rather than representing the Chinese ethnic styles. Some works that have incorporated Chinese traditional art style leave much room for improvement, as studies should probe more into the implication of Chinese traditional art¹⁰. Nevertheless, these previous studies have their corresponding limitations.

This article analyses the application of Chinese ink elements in modern poster design by citing specific examples. A profound study is carried out on the positioning of Chinese ink painting elements to summarize the innovative ideas of incorporating them into modern poster design. We aim to provide theoretical support to preserve the Chinese traditional culture and promote the development of poster design at the same time.

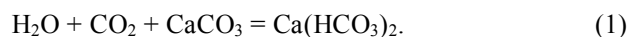
Method

The fusion method is regarded as a promising approach in the field of design. The best effect of image fusion is presented on the basis of a series of links from cooperation and competition among a variety of fusion algorithms to information feedback and parameter adjustment of fusion algorithm using this method. The main idea of using such a method is to obtain multiple fusion images between physical or chemical theories and arts, and then combine them with techniques of formal composition in modern design (i.e. deconstruction and isomorphism). The elements are transplanted and grafted to Chinese culture, such as Confucianism, Buddhism and Daoism. This method also provides a novel design idea and finds a reasonable conjunction point to integrate Chinese ink painting elements with modern poster design under the process of cultural globalization. The application of the novel attitude of ink painting elements in modern poster design can be achieved faster with computer-aided design software. The fusion of traditional and modern art can be greatly improved with the application of computer software in art design, which brings a new aesthetic feeling of art to people. Traditional Chinese ink painting is drawn using special paper materials and brush tools, and then this artistic work is scanned onto a computer. According to the needs of the poster theme, the scanned image can be moved, modified, reproduced, permuted and combined using image processing software¹¹. A schematic diagram of innovation research on Chinese ink painting elements in modern poster design is shown in Figure 1.

Results and discussion

Is the phenomenon of dripping water penetrating a stone a chemical reaction or a physical reaction? Dripping water on a stone other than limestone causes physical

change because neither the stone nor the water is turned into another substance. However, dripping water on a limestone dissolves the limestone because of carbon dioxide, which produces water-soluble calcium bicarbonate and creates a chemical reaction as shown below



The use of Chinese ink painting elements in design through formal composition is considered a physical change. Alternatively, the merging of Chinese ink painting elements with a design is considered a chemical reaction. The innovative idea of merging Chinese watercolour painting elements with modern poster design has three aspects: (i) the innovative idea determines how to achieve the merging; (ii) innovation in design can be achieved by merging the physical dimension with art, and (iii) innovation in design can be achieved by merging the chemical dimension with art.

Merging determined by the innovative idea

When the elements of Chinese watercolour painting are incorporated in poster design, the cultural implication should be fully considered when forming innovative ideas. A myriad of delicate elements can be achieved by preserving the charm of the original form using the simplification of formal composition. By controlling ideas, techniques and materials, these elements become the enlightening and innovative points in poster design. Therefore, the elements of Chinese ink painting can be naturally merged with modern poster design. A good poster design is derived from innovative ideas, and a bridge can be built between the intrinsic spirit and external form of the Chinese watercolour painting elements.

Design innovation achieved by the merging of physical dimension and art

Physics and arts have their own domains of research, pathway, perspective and technique. They pave the way for understanding and shaping the world. These two distinct domains overlap and interpenetrate, but share similarities and are intrinsically united. By merging physics and arts, design innovation refers to the processes of verve, morphology, colour, image elements and word images. These processes can be found in the elements of Chinese ink painting and are extracted on the basis of the implications of Chinese traditional culture and the innovative ideas of formal composition simplification. The incorporation of elements of Chinese ink painting into modern poster design results in a brand new artistic image¹². Deconstruction refers to the breaking of the established boundary in composition by dispersing and dissociating power to create a new definition¹³.

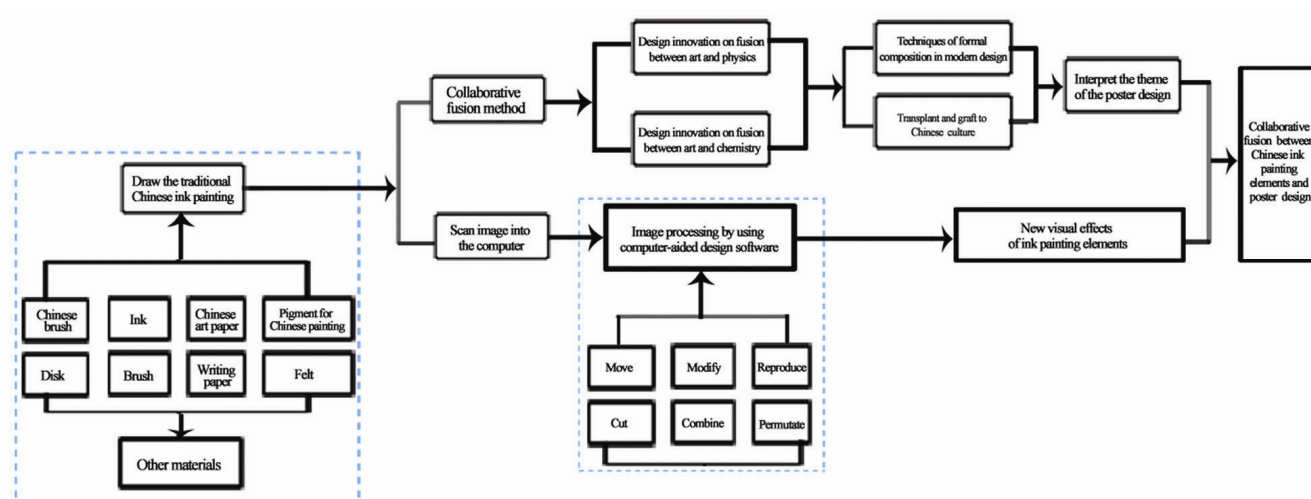


Figure 1. Schematic diagram of innovation research on Chinese ink painting elements in modern poster design.



Figure 2. One of the ten best posters for the 2010 Guangzhou Asian Games: the beauty of Chinese ink painting – running.

Emphasizing divergence and difference, deconstruction integrates irrelevant elements, and it is represented by the combination of Western and Chinese elements in poster design. Isomorphism is the combination of various elements into a whole. A new form created by isomorphism is not just a simple addition to the original form, but the preservation of identical principles, despite the superficial divergence. Figure 2 shows one of the ten best posters for the 2010 Guangzhou Asian Games. This poster can be deconstructed through splashing and scattering of ink, which represents the transient motion of running and creates the visual effect of a lively image. The representation of the theme in Chinese ink painting is achieved in a novel and natural way.

Design innovation achieved by the merging of chemical dimension and art

Chemistry is a typical Western discipline that studies the structure, properties, composition and variation rules of a substance. Chemical elements refer to basic non-metallic and metallic substances, which total to more than 100 in the world. In philosophy, elements constitute an abstract form of the representation of the original spirit. Artistic elements are embedded in chemical equations, especially symmetry. Various forms of chemical equations have to obey one simple principle of conservation, including the conservation of type and number of atoms and the conservation of electrons lost and gained. This principle of conservation is analogous to echo and symmetry found in artistic works. For instance, classical Greek artistic schools strictly obey the Euclidean principle of perspective and stress the overall effects of this principle. Various parts of a work are required to be connected in a certain way, with each part serving as an organic component of a whole. For example, each molecule, atom and even electron in chemical equations is an essential component juxtaposed to represent hundreds of thousands of chemical reactions. We take the standpoint of chemical reaction in this article in analysing and solving the innovation problem of merging the elements of Chinese ink painting with modern poster design. By applying substance classification method in chemistry, chemical reactions can be divided into four categories by the type and number of reactants and products.

(1) Combination reaction, which is the combination of more than two elements or compounds to form a new substance, is expressed as

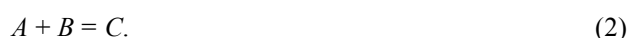


Figure 3 shows one of the representative works of Jin Daiqiang, China's famous graphic designer, which is a series of posters. What makes this work remarkable is the



Figure 3. A series of posters titled 'Chinese characters: mountain, water, wind, cloud'.

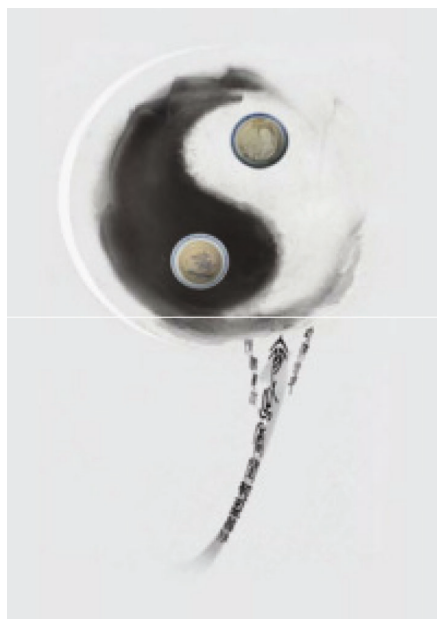


Figure 4. The poster titled 'health care tea'.

combination of Four Treasuries of Study (i.e. writing brush, ink stick, paper and ink slab) in photographs with Chinese ink painting. The works are characterized by a unique mysterious charm of the East, contain the visual effects of landscape painting, use an appropriate general format and are rich in spirituality. The significance of this series of posters is the dissemination and innovation of Chinese traditional culture. Every detail of the image reflects the designers favouring Chinese elements. The Four Treasuries of Study depicted in the image are enlivened by Chinese ink, and the images of 'mountain, water, wind, and cloud' are charged with human spirit. These posters show a majestic vigour that exemplifies the Chinese belief that 'man is an integral part of nature'¹⁴.

Figure 4 shows a poster which is a combination of Eight Diagrams in Daoism with Chinese ink. In this poster, the image language of Chinese watercolour painting is fully utilized. As the carrier of Chinese traditional humanities, ink painting absorbs the ideology of Confucianism, Buddhism and Daoism. It is the crystallization and embodiment of Chinese ethics, which conveys a strong Chinese ethnic style.



Figure 5. The poster titled 'Colorful Guizhou' (China).

(2) Decomposition, which is a compound broken down into more than two constituent elements or small molecules, is expressed as

$$A = B + C. \quad (3)$$

The poster shown in Figure 5 is given the title 'Guizhou', because of its high integrity and rich implications. With Chinese characters and Guizhou as the prototype, the pictographic element is blended into the poster, creating a lively and extraordinary effect. Through calligraphy and painting, the indigenous culture, historical sites and folk culture representatives are produced, and beautiful scenes of Guizhou are introduced. The transformation and combination of forms, colour and space make this poster a work of calligraphy, a landscape painting, a wine vessel and an ethnic custom painting. The Chinese characters convey spirit, and the images feelings and emotions. The poster exhibits a strong sense of exclusiveness and uniqueness. It is a blending of excellence, culture, art and fashion. The poster is not only intuitive, but also contains rich implications, thus making it stand out from among other posters. By evoking much thoughts and feelings, this poster is a supreme design for the image of Guizhou. The elements of Chinese ink painting can be seen and interpreted from various perspectives.

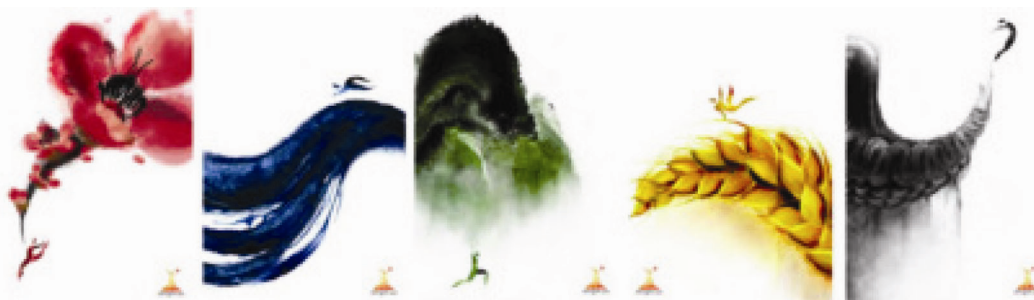
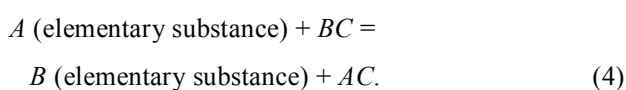


Figure 6. One of the ten best posters of the 2010 Guangzhou Asian Games, titled 'Five colours of Asian Games'.

(3) Displacement reaction, in which the reaction of a single element and a compound, forms another single element and another compound, is expressed as



However, the structures of different forms remain unchanged, whereas the old elements are replaced by the new ones. The idiom 'changing one's appearance' means that the look of a person may change (i.e. only the appearance and form change), but the substance does not (e.g. changing a Chinese character in a Chinese idiom to create homophonic effect).

(4) Double decomposition reaction, in which components of more than two compounds produce more than two compounds, is expressed as



In movies, spatial and temporal changes can be represented by 'dissolve in and dissolve out'. That is, at the time when the last image disappears (dissolves out), the following image appears (dissolves in), with a temporary superposition on the screen. Therefore, double replacement takes place by dissolving. In this way, reality is connected by reverie, memory and association, which implicitly convey their meanings. Figure 6 shows one of the ten best posters of the 2010 Guangzhou Asian Games, which is an example of the double-decomposition reaction technique. Taking into consideration the indigenous features of the southern Yangtze River, a classical colour can be explored to match some specific forms with indigenous features instead of juxtaposing all relevant forms.

When designing posters, modern artists tend to use bright colours, such as Oriental red, grass green, rose, azure, lemon yellow and grape purple, to replace the reserved ink colour in Chinese traditional paintings. The five colours of the Asian Games (red, black, green, yellow and blue) are painted in brightly coloured inks to represent the indigenous features of China, achieving a good visual effect and a strong visual impact. The brightly

coloured ink is made of minerals with strong cover ability or with thin, transparent plant-derived pigments to achieve a colourful visual effect. Arnheim¹⁵ argues that form and colour can make vision accomplish its most important functions. Both convey facial expressions and distinguish between various objects and events to acquire the information related to these objects and events. Modern colours are used to conform to the category of posters. The choice between elegantly and brightly coloured inks should be done on the basis of theme and context after careful deliberation.

Analysis and comparison among various research methods

At present, the elements of Chinese ink painting can be introduced into modern poster design in many ways. One way is direct application, which refers to the composition of patterns that contain rich cultural meanings of traditional arts that can be directly applied to the posters. Therefore, by preserving the general form of Chinese ink painting, the relevant elements are transplanted into the context of modern posters. It is easy to implement this method, but it might lead to inappropriate adoption of some elements of Chinese ink painting. These elements are used blindly to pursue a traditional aroma regardless of the context and whether the meanings conveyed are consistent. In these posters, the elements of Chinese ink painting are only misplaced 'overcoats'.

Simplification is the most frequently used technique when adapting the elements of Chinese ink painting to the context of modern posters. Simplification is executed to achieve the goal of 'simple composition and strong sense of formality'. The complicated elements are simplified and extracted, preserving the verve and the essence of the original pattern. Therefore, the main images are more condensed in meanings, and the beauty of the original patterns is preserved and magnified. This technique is widely applied because of its simple composition and strong sense of formality. However, this technique has an oversimplified defect and lacks innovation.

The Six Principles of Chinese Painting, which was established by Xie, have influenced both traditional

paintings and modern Chinese design¹⁶. Therefore, the summary of the design principles in Chinese traditional paintings can start from the Six Principles of Chinese Painting. The application of these to expand the techniques of Chinese ink painting is a new idea in modern Chinese painting. The main idea is to use ink and not to stick to an established pattern, even in action art. Although this method is controversial in various schools, it creates a surprising effect in poster design. However, the designers may be confined to the narrow space of water and ink and therefore cannot make a breakthrough. The expansion of Chinese ink painting techniques is usually in the form of a visual effect not observed in the use of ink or ink-like materials. It is only an abstract inheritance of Chinese ink painting in artistic conception or charm. This innovation of techniques can help convey an indescribable artistic conception. Therefore, the designers should not confine themselves within the narrow space of water and ink. The innovative and creative use of every feasible means of representation is also an extended application of Chinese ink painting elements in poster design¹⁷.

The technique of coordinating and merging proposed in this article is inspired by physical and chemical changes. In light of this technique, we analysed the application of Chinese ink painting in modern poster design. The idea of the 'instant dissolution of elements' is special because identifying the sources of inspiration is not required, and there is no form in the poster that has been used before. Research on this technique has just started, and a few examples are available for analysis. Using comparisons and analyses of various techniques, we should integrate the modern design idea with the ancient ink painting and gain new insights into the relationship between art and design¹⁸.

Summary

To adopt the Chinese traditional culture and merge Chinese ink painting elements with poster design, we have analysed specific examples and summarized the methods of applying ink painting elements to poster design. The technique of coordinating and merging, which is based on innovative conception, is the starting point of fusion. Combining the ideas of physical and chemical changes in

art for design innovation can help achieve the merging of Chinese traditional culture and modern design. Overall, the modern poster design uses the traditional rule of Chinese ink painting, which in turn can be incorporated into poster design.

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