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An Electronic Art Method within the Framework of *Xu Shi* Art Composition

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Abstract

Under the background of modern scientific and technological art practice, artworks with contemporary characteristics are often created based on conventional culture and art. The important module of this study is *Xu Shi*, also known as the White Space technique, which is a critical component of composition and aesthetics in Chinese Ink Painting, derived from an aesthetic system in the long tradition of Chinese culture. Despite the existence of numerous scholarly investigations pertaining to the *Xu Shi* concept within the realm of traditional Chinese Ink Painting, there remains a significant deficiency in research focused on the practical application of *Xu Shi* principles in the domain of electronic art. Therefore, this study identifies the importance of *Xu Shi* whereas the main visual criteria for the formation of conventional Chinese Ink Painting and in what manner interpreted the form of electronic art. This research conducted practical applications to determine the viability of using *Xu Shi* technique to convey electronic art, which presents this adaptation as possible. The study method included formal visual analysis, mathematical calculations, and practice-led research. Through this merger, it is possible to create electronic art that provides a fresh perspective and significance of Chinese ink painting in a new background beyond the traditional context.

Keywords: Chinese ink painting; art adaptation; white space; *Xu Shi*

INTRODUCTION

Chinese Ink Painting is regarded as one of the most ancient forms of traditional art and holds a significant position in the annals of art history (G. Wang et al., 2022). According to Shah et al. (2020), The Chinese Ink Painting tradition is a remarkable manifestation of the ideological essence of Chinese civilisation that has endured for over 5,000 years and is still being observed in contemporary times. The principles of Chinese Ink Painting are greatly influenced by the philosophical views of Chinese Taoism, which prioritises a high value on the interconnectedness and balance between mankind and the cosmos (Bao et al., 2016). Around the 4th century BC, Laozi, a preeminent philosopher from China, posited that the world is a combination of "existence" and "nothingness," or else the unification of *Xu* and *Shi*. According to the Chinese perspective, the dynamic framework defining intricate connections between humanity and the surrounding environment and the broader universe is distinct from precise physical qualities or object mimicry.

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In conventional Chinese concepts, *Yin Yang* and *Xu Shi* are interdependent and complement each other. *Xu Shi* is a term repeatedly adopted in Chinese literature theory and art, according to Powers & Tsiang (2017), and refers to blankness and existence. In the creative stage of Chinese Ink Painting, to present the image more prominent overall, it is advocated to use more appropriate means to achieve specific painting techniques. Among them, the *Xu Shi* art composition technique can enhance the charm of Chinese painting and truly complete works with rich connotations and the artistic conception of creation. One of the key domains of Chinese Ink Painting is the *utilisation of the Xu Shi technique*, which enhances the visual appeal of the painting's composition. Wu (2019) asserts that in Chinese Ink Painting, the colour of white holds a significant value. It is particularly useful when used as the background colour to convey a sense of naturalness and purity, while also emphasising the weightlessness image that is integral to Chinese Ink Painting. Furthermore, using white space in these paintings can create subtle shadows when illuminated by sunlight, which can help balance the composition and give it a greater sense of depth. Fan & Zhang (2020) defined *Xu Shas a commonly fundamental type of sensory input and a stylistic component that possesses no overt semantic significance yet can* communicate a pure and creative feeling. In many famous works, white space is utilised to portray shapeless subjects such as streams, fogs, and ponds that are rooted in Chinese philosophy and aesthetics. According to M. Wang (2017)'s view, Chinese Ink Paintings frequently display the charm of rivers and mountains by incorporating white space, and the painter can imbue the picture with a spiritual level by correctly positioning the white space. Fan et al. (2019) argue that it can evoke a sense of minimalistic and elegant beauty, but it has the potential to obscure the intended subject matter.

One of the latest and notable is the artistic fusion of "ink wash + installation" within the realm of Experimental Ink Painting. To create a contemporary art system that is distinct from realistic ink and traditional ink, this category aims to transcend the conventional boundaries of "ink" and cut the spiritual ties of traditional ink and wash (Pedith, 2013). For instance, the process of transforming Chinese ink art on an easel from its typical two-dimensional surface to a multidimensional one, combined with the multi-angle exhibition method of sculpture, offers a fresh perspective on space (Zheng & Fan, 2021). The creative practitioner often employs composite substances to investigate abstract domains beyond ink-based artistic frameworks' conventional boundaries. The process of transforming Chinese ink art on an easel from its typical two-dimensional surface to a multidimensional one, combined with the multi-angle exhibition method of sculpture, offers a fresh perspective on space (Zheng & Fan, 2021). While ink and wash installation art challenges the spatial dimension of creation, it profoundly alters the traditional mode of ink and wash skill, which is usually limited to a static two-dimensional surface.

Pan Gongkai's artwork, *Sleeting Melt Down into The Lotus* or *Melt*, can be seen as a projection and transformation of the foundation of Chinese Ink Painting. The artist uses projection techniques to create Chinese characters through electronic means in real-time, utilising the unoccupied areas to express their ideas and creativity. By integrating traditional ideas and artistic techniques into new media art practices, this study provides valuable insights into the potential for making traditional Chinese art more accessible on an international level (Duan, 2020). Besides that, in the research of Cao et al. (2023), they constructed an interactive 3D Chinese painting animation *Illustrating Ten Poems*, which allowed audiences to fully immerse themselves and grasp its significant implications. It was assembled by harmonising two-dimensional and three-dimensional reconstruction methodologies, free-viewpoint technology, character engagement, recited poetry, and ambient musical accompaniment. This

accomplishment transcends the intrinsic two-dimensional confines of traditional Chinese Ink Painting, thereby delving into the exploration of multidimensional spatial possibilities and functions as a more potent medium for cultural exchange.

Prior to this, there was no research focus on the possibility of electronic art practice within the framework of *Xu Shi* art composition, the main visual standard of Chinese ink painting. Hence, this research aimed to identify the importance of White Space Art or *Xu Shi* as the main visual criteria for the formation of conventional Chinese Ink Painting Art. Consequently, this research concentrated on completing the formation of a final electronic artwork with the theoretical rationale of *Xu Shi* art composition as the second objective. Finally, to construct the final artwork where the *Xu Shi* changes dynamically based on user input, initiating a relationship between presence and absence in a modern digital environment. Based on these aims, in what manner can the conventional notion of *Xu Shi* within the context of Chinese ink painting be proficiently transposed and assimilated into electronic artistic expressions while preserving its inherent aesthetic and philosophical importance? This approach to traditional aesthetics in electronic art provides a comprehensive understanding, which will be explained in the forthcoming chapters.

METHOD

The formal analysis method utilises a work's visual aspects to create a persuasive argument and foster a stimulating discourse. In the context of Chinese Ink Paintings, the main visual criterion that was examined was the composition of White Space technique and how it affected the painting. The researchers applied mathematical calculations representing the Salient Region, which is related to white space, to demonstrate the prevalence of *Xu Shi* in the reference artworks. The identification of visually salient regions can be useful for object-oriented image retrieval and flexible content delivery (Achanta et al., 2008). Fan et al. (2019) used a salient region detection and segmentation model to explain how the presence of white space impacts the viewer's visual aesthetic capability. The study conducted by Z.-B. Fan et al. (2022) also note the recent method of this model, which restricts the impact of other factors on how white space affects how complexly a painting is perceived. A mathematical calculation is performed by assessing the percentage of blank spaces in each artwork to ascertain whether white space is present in prominent areas.

In the exploration of the *Xu Shi* technique applied to electronic art, empirical statistics are provided by the author's own knowledge of the artwork's execution. The author employed mathematical computations for the important region related to the white space to obtain statistical evidence that more accurately represents the reference artwork's white space. This data will be explained in the study's results section. The primary features that distinguish electronic art are its hybridisation of diverse artistic approaches and media and the incorporation of interdisciplinary elements. In the early stage of art practice, the main materials used in the artwork are ink and rice paper, which emphasise the composition of *Xu Shi* in conventional form. Alternative and contemporary methods are applied to establish a post-modern setting that is suitable for electronic art approaches (Figure 1).
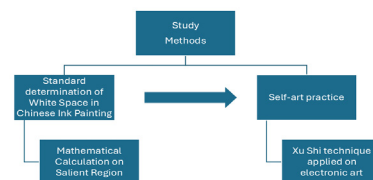

Figure 1. Flow of the study methods

RESULT AND DISCUSSION

Identify and Verify Artworks by Mathematically Calculating Salient Regions of Selected Instances of Artworks in Traditional Media

This mathematical computation entails examining whether white spaces are present in significant areas (Z. Fan et al., 2019). This is accomplished by counting the proportion of white space in every piece of art. The control of visual attention by humans relies upon two strategies: a rapid, stimulus-driven, vertically from bottom to an upward method and a sluggish, volitionally monitored, which is a vertically and vice versa approach different from the aforementioned method. A study conducted by these experts found that if white space covers 30% of a painting, it should be deemed a part of the white space. In the process of conducting a formal analysis, the author made use of specific guidelines. One such guideline involved using the Image Color Summarizer program application to calculate the proportion of white space present. However, it needs to be aware that some specific image files may display a little colour disparity when uploaded to the Image Colour Summarizer. However, colours that are close to white will still be included in the white space calculation.

The artwork of David Liew Chanhua, *Happy Time* depicts an atypical interpretation of Chinese Ink Painting, primarily in its choice of subject matter (Figure 2). The artist's pieces prioritise a sense of ease and minimalism in their execution, emphasising the importance of brushwork, fluidity, sophistication, and precise composition. This specific Chinese ink painting uses a mathematical computation technique to display more than 30% of its surface area as white space, which equates to 63.1%. This serves as proof that David's artwork places significant emphasis on the use of negative space. The vacant white background in this painting serves a deliberate purpose and is not without value. Its presence helps enhance the overall composition of the image. The artist adopts a philosophical stance that leaves space for the expectations and imagery of the audience. Numerous possibilities for interpretation lie in the depiction of the empty space as an evocative association with the orangutan as the main subject, with the ancient jungle (or other imagery) covered in mist in the backdrop.
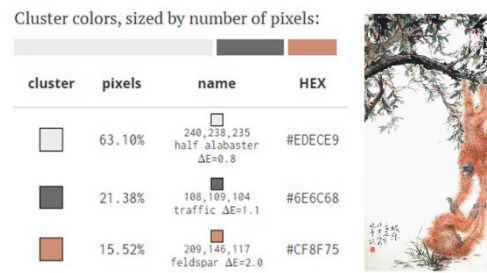

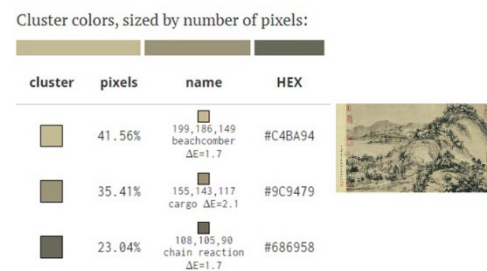**Figure 2**. Result of *Happy Time*

Figure 3. Result of *Pure and Remote View of Streams and Mountains*

When examining ancient artwork, prolonged exposure to high-intensity light causes the scroll paper or painting to develop a yellow hue and brittle texture. Furthermore, due to the artwork's age, which may span millennia, oxidation has already taken place. Since white or a close approximation of it is assumed to have been the artwork's foundation colour in the past, any yellow or light brown tones are regarded as such in the analysis of such works. During the Song dynasty, Xia Gui was a Chinese painter who utilised a distinct technique in his art. His most well-known method was to arrange the composition so that mist covered much of the landscape and only a little section could be seen. Towering peaks and meandering rivers are only two of the many viewpoints the artist used to create the painting's variegated environment, which makes for an intriguing and distinctive composition. According to *Image Color Summarizer*'s analysis, this classic Chinese Ink Painting is composed of 41.56% (Figure 3). The empty space stands in for the mist, an endless, enormous, and formless natural occurrence. Hen-

ce, it can be assumed that Chinese culture has always appreciated the usage of white space, which is consistent with the Taoist school of thought.

These results show how the natural colour of rice paper may be used to create the illusion of clouds or fog by employing white space. A wide landscape view is the easiest way to interpret a large space into an ink painting to achieve the *Xu Shi* art component. The researchers utilised a painting named *Daydream*, the theme scenery of which was derived from Batang Ai, the predominant artificial lake located in Sarawak, Malaysia. This artwork is made using materials for Chinese ink painting, and the exact amount of white space required is calculated to verify its presence once again.

The computations show that 42.69% of the painting's colour is white, emphasising the importance of Xu Shi in understanding the core theoretical ideas of Chinese ink painting, namely, the Taoist concepts of existence and emptiness. The sky and the lake are purposefully left white in the artwork's arrangement, which has been digitally improved in post-production (Figure 4). The concept of *Xu Shi* theory aligns with the aim of provoking the observer's creativity. This principle is upheld through post-production techniques that grant artists the capacity to project vibrant, moving images that move beyond a mere static representation.

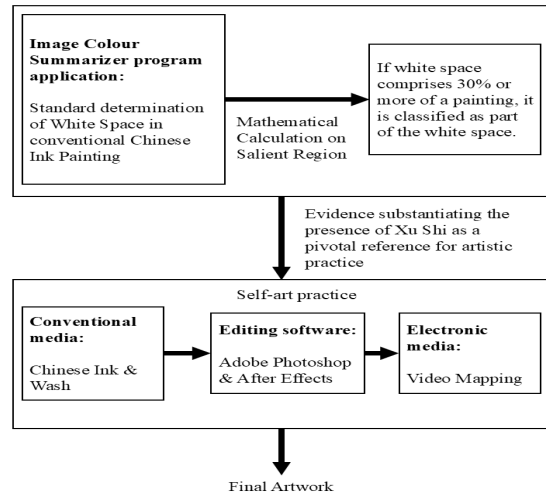
Figure 4. Result from *Daydream*

Figure 5. Flow chart of the art practice

Adaptation of Electronic Arts Method in Artwork

As an art form, Chinese Ink Painting goes beyond the standard 2-dimensional presentation. Instead, it was able to be divided into multiple layers within a 3-dimensional space. The wall-hanging scroll display gives a perception of rhythm to the "white space" from top to base vertically and demonstrates a layered arrangement. The artwork's concept aligns with the early stages of video mapping art, which aimed to explore the spatial dimension brought by "white space". Yang Yongliang, a modern Chinese interdisciplinary artist based in Shanghai, uses his vast collection of photographs to capture various cities, skilfully combining and overlaying these images to construct entirely new realms (Amanda & Stella, 2016). Apart from a few rough pencil drafts, the entirety of this creative process takes place in the digital realm, utilising the powerful tools of Adobe Photoshop (PS) and Adobe After Effects (AE). Based on the mentioned artist's approach, this artistic practice consists of still images edited into dynamic forms of Chinese Ink Painting style artwork. Prior to the animation process, the drawing undergoes "Layer Masking" in Photoshop software. This step let each element in the drawing to be separated into individual layers, as each follows its own direction of movement. The animation portion of the

video mapping presentation was produced using After Effects software (Figure 5). The "Puppet Pin Tool" is utilised primarily for editing plant movement effects, allowing for tracking specific movement parts. The blank surface of a handcrafted set of scrolls is the medium onto which a video mapping projection is cast, creating a form of presentation that differs from conventional approaches where the drawing remains static. Ultimately, the final display of the artwork represents the culmination of the formation of a final work that is informed by the philosophical underpinnings of White Space Art or *Xu Shi*.

Upon completion of the phase, the ultimate manifestation of the artwork comes to fruition in the display of an art installation. The art installation consists of both a drawing and a projector. To produce a full visual experience, the video projection—which calls for a projection device like a projector—will fill the empty spaces on the scroll, also called "white space." This implementation aims to produce a dynamic image that demonstrates the potential of white space. This is intended to disprove the notion that white space is simply an empty void. By achieving this, subjects that do not conform to *Xu Shi* creative vision can be represented using real imagery. Through this study, it has been established that the presence or absence of the depicted subject can be compared between static and moving appearances. The term "contemporary" in the context of contemporary art refers to more than only works created in the current era; rather, it signifies a departure from both modern and post-modern art (McNamara, 2012). Therefore, this transformation requires thorough explanation and comprehension. According to O'sullivan (2010), two discrete moments form the aesthetics of contemporary art: affirmation (something new) and dissent (a turning away from or rejection of the norm). These two moments then trigger additional actions: criticism and creativity. Contemporary art has the capacity to fully exploit the potential of materials and media beyond what is pos-

sible in traditional art. The main concern is how this investigation will affect the ability to maintain the fundamental principles and aesthetics of traditional Chinese ink painting. For example, ink paintings' aesthetic reading is sometimes seen as a metaphysical rationalisation concerning the meaning of "empty" space. The research's findings were achieved through a rational and scientific approach, which adheres to the critical thinking principle espoused by scholars.

CONCLUSIONS

The incorporation of *Xu Shi* (White Space) principles within the domain of electronic art represents both an intriguing opportunity and a multifaceted challenge for contemporary artists and scholars. As evidenced by this research, *Xu Shi*—anchored in traditional Chinese ink painting heritage—embodies profound cultural, aesthetic, and philosophical implications. The intricate interplay between form and void, which lies at the core of *Xu Shi*, possesses significant potential to impact modern electronic art practices. Nevertheless, the shift from a stationary, artisanal medium to a fluid, electronic one prompts critical inquiries regarding the faithful adaptation of these principles without compromising their intrinsic significance.

Prominent challenges encompass the constraints of existing digital tools in their capacity to meticulously emulate the nuances of traditional brushwork, the complexities involved in sustaining visual equilibrium within dynamic or interactive digital contexts, and the potential for cultural misinterpretation when these deeply philosophical notions are conveyed through unfamiliar, contemporary mediums. Notwithstanding these hurdles, electronic art proffers distinct advantages, such as interactivity, movement, and digital layering, which can enhance and broaden the conventional understanding of *Xu Shi*.

This study elucidates that while the transposition of *Xu Shi* principles into

electronic art is fraught with complexities, it simultaneously provides a conduit for innovation within the artistic sphere. It prompts artists to reconsider the significance of space, equilibrium, and cultural legacies in an increasingly digital milieu. By safeguarding the philosophical tenets of *Xu Shi* while delving into novel technical avenues, electronic artists can foster a dialogue between historical and contemporary contexts, thereby expanding the horizons of both traditional and modern art.

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