



Serenity

3D Animation to
Simulate Chinese
Ink Painting
by
Lily Shen

The background of the image features two soft, out-of-focus mountain peaks. A vibrant rainbow gradient is applied across the scene, with colors transitioning from purple and blue on the left, through green and yellow in the center, to orange and red on the right. The overall atmosphere is serene and ethereal.

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3D Animation to Simulate Chinese Ink Painting

By

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Abstract

Serenity is a computer generated ink-wash animated short in which the traditional aesthetics meets the new media. I combined theoretical research and physical experiment to convey a peaceful pleasant feeling with subtle movement.

The focus of this thesis is to assess the possibility and capability of digital instruments in simulating the traditional Chinese ink painting and further transplant to three-dimensional (3D) platform. This thesis presents a new approach to practice Chinese painting and to compose an animation by using 3D techniques and non-photorealistic rendering (NPR). The aim for the composition portion of this project is to produce a refreshing animated visual style and to introduce the traditional methods of Chinese painting not only to the west, but also to the new Chinese generation who usually devote their time and energy to the subjects that might guarantee a better university or job.

My research draws on the previous ink-wash animations and the visual reference on Chinese painting, and takes advantage of my personal experience in both traditional training and digital media design to exploit a potential path for ink-wash animation in the competitive commercial market. Expanding traditional ink painting into the digital field provides an opportunity for the archaic art form to be communicated and shared widely and efficiently worldwide.

Chapter 1 - Introduction

This exegesis documents a research project that attempts to simulate Chinese ink painting using 3D technology to re-produce an ink-wash animation. Chinese ink painting is unique in aesthetics compared with that of the West and the ink-wash animation is a symbolic innovation which has a strong national flavor.

Digital media, such as 3D technology is one new approach to resurrect the old method of ink-wash animation. This new visual style does not just aim to duplicate the traditional paintings - it delivers a creative conception with strong Chinese characteristics. This creation has the potential to lead Chinese painting and ink-wash animation to the future and spread the spirit of Chinese culture. This new technique of expression could enrich the current animation market, which is largely dominated by the West. Although some pioneers started to experiment with digital version of ink-wash animation since 2000, this topic is still relatively new and the challenge lies on many aspects. The first is the lacking of published material. This means that it is difficult to directly learn from previous examples. Individuals or small groups usually carried out these previous studies so that the influence of these previous works were quite limited. Most important of all, the fact that Chinese painting itself is a significant part of Chinese long history demands that the researchers have a deep understanding of the ancient art form and the culture.

Serenity is my final result of the study which utilizes multimedia software including Maya, 3DSMax, Adobe Photoshop and After Effects in an unconventional and creative way. In this research, 3D software for creating computer-generated images (CGI) was used to emphasize the more organic brushwork rather than photo-realistic outputs. I took inspiration from ancient masterpieces and some more modern digital attempts.

1.1 Background

"Outside Europe, there is no livelier, richer or more technically accomplished tradition of painting than that of



Chinese painting is a time-honored type of art and it enjoyed its prime for more than 1,000 years as Dr. Bushell divided the periods as classical (265 - 960) and development and decline (960 - 1643). (Bushell, 2012) Chinese art has shown signs of stagnation since the early 19th century. Although a renaissance emerged in the traditional arts of calligraphy and painting in the second half of the 19th century, the general life of Chinese populace was tragic. The following turmoil deprived the artists of the leisure and joy of pure interest critical contemplation. (Fong, 1993)

After struggling for several decades, China's economy went back on track slowly and only then people started to set their eyes on art again, in a small scale, and mostly as a casual hobby. Chinese ink painting was first exclusive to upper classes only, then thrived among the literati. Nowadays everyone has this privilege to learn and practice while the younger generation is busy admiring the west and leaving our own treasure buried in the history. I had ten years' worth of training since the age of six. My parents naively thought it was a minor financial investment in paper and a few brushes in comparison to a more expensive alternative like taking up the piano. As time went by, new media sprang up and have attracted the attention of the young generation. While the development of new media is arguably a symbol of civilization and progress, it makes the revival of traditional Chinese painting even more difficult.

It has been another ten years since I stopped practicing Chinese painting, but I always want to take it up again, and if possible, I want to make an effort to make it better known to the world. I sensed this research could be a good chance for me to seek a new way to present the classic Chinese painting and ink-wash animation using modern technology.

Wen C. Fong, emeritus professor at Princeton University and consultant to the Metropolitan Museum of Art, wrote in *Why Chinese Painting is History*, "...our perspective of viewing Asian art in the modern discipline of art history derives from the commitment to a comparative study of the world's different cultures. With the new perspective of the 21st century, the wealth of classical Chinese art and history becomes a deep and profound cultural resource to be explored and, if possible, reintegrated into modern life and creativity." (Fong, 2003) To me, the "modern life and creativity" lie in 3D technology and my research question is "How can digital media be used to represent a classic, primarily 2-dimension art form?" My early training has already set a solid foundation to look into this complicated topic, and drawing on my working experience as a 3D artist for six years, I intend to find a synthesis that would illustrate the

underlying connections between these two (seemingly) opposites.

1.2 A brief introduction to Chinese painting

1.2.1 History

According to Wang Chi-Ch'üan, the earliest known examples of Chinese painting are on the lacquer boxes of the third century B. C. and on the pottery and stone slabs from the tomb chambers of the Han dynasty, mostly figure paintings, but also the earliest landscape motives as a background. Pure landscape appears at the end of the Tang dynasty. (Wang, 1947)

Chinese painting reached its summit during the Sung period, especially landscape, then continued to flourish in the Yuan dynasty. Most of the Yuan artists were scholars and they thought Sung painting was not free enough, even though the Sung all-round master Su Shi (苏轼) initiated the free form of *xie yi* (写意), literally meaning “write ideas”. From then on, Chinese painting has always been focus on self-expression rather than depicting the superficial form of subjects. The Yuan masters followed the path of Su and applied themselves to an independent personal style. (Wang, 1947)

During the Ming period, an effort was made to combine the spirit of the Sung and Yuan masters to establish a new style, but the majority painters were still greatly influenced by the Southern Sung Academy so that the real Ming style lost its original impulse and vitality eventually. A number of prominent painters sprang up in the Qing period and then came the turning point of decline. (Wang, 1947)

To sum up, in his book Chinese Art, Dr. Bushell divided the history of Chinese painting into three periods: the primitive period, up to A. D. 264; the classical period, A. D. 265 – 960; and the period of development and decline, A. D. 960-1643. (Bushell, 2012)

There were still a number of great masters like Qi Bai-Shi (齐白石) and Xu Bei-Hong (徐悲鸿) plus a new style – the short-lived Lingnan School – popped out during the contemporary era. From 1906 to 1951, Lingnan School merely



existed half a century and tangled too much with politics and social problems. As Croizier indicated, “Realism, conscious syncretism, heightened emotional content, more vivid colors, selective use of perspective, light, and shading – all are commonplace in the national-style painting of the People’s Republic. It is possible that more of this was borrowed from the Lingnan pioneers than has been acknowledged or recognized either by artists or art critics.” (Croizier, 1988)

After that, the art of Chinese painting gradually stepped down from the stage of history.

1.2.2 Categories

We can conclude from above that throughout the history, Chinese painting itself emerged many different schools and styles, but generally it falls into two main categories: *gong bi* (工笔) and *xie yi* (写意).

Gong bi - meaning “meticulous brush” – which is an elaborate official style, mostly practiced by artists working for the court. It usually presents highly detailed brushstrokes and colors. *Xie yi*, on the other hand, is welcomed by the literati as a more freer style without outline. (Trouveroy, 2003)



1.3 Chinese animation

Unlike the glorious history of Chinese painting, the history of Chinese animation is full of interruptions and twists. The animated cartoon industry in China began in the 1920s. From the first film with sound *The Camel’s Dance* (L. Wan, Wan, & Wan, 1935) to the *Princess Iron Fan* (G. Wan & Wan, 1941), China was relatively on pace with the rest of the world. With the establishment of Shanghai Animation Film Studio (SAFS), China welcomed the golden age of Chinese animation from 1950 to 1965 during which a number of excellent works popped out. *Why are the Crows Black* won an award at the 8th Venice Children’s Film Festival in 1956, but it was also labeled with a tag of “Soviet Union style”. Afterwards, industry pioneers began to explore their own way of making Chinese animation and 1956’s *The Proud General* was recognized as its first result. The symbolic style of ink-wash animation was born in 1960 with the release of *Where is Mama* which finally realized the unprecedented conception and opened a new chapter in Chinese animation. In 1963, the studio created the second – *The Cowboy’s Flute*. Wan brothers’ award-winning film *Havoc in Heaven* spanned 4 years from 1961 to 1964. This 2-hour long film began to explore a connection between

Chinese traditional painting and animation, and was considered an ideal combination of Disney-style and Chinese traditional arts. The industry was booming during this period, but in 1967, the explosion was interrupted by political events. ("History of Chinese animation," n.d.)

The political turmoil lasted for a decade. Since 1978, SAFS again took on the responsibility of developing Chinese animation and became China's sole production house, launching more than 200 animation films in the 80s. A so-called second Golden Age of Chinese animation began, but damages had been done already. Among so many works, only a few managed to earn awards. Ink-wash animation attracted visitors from Japan in 1981 who wanted to learn the techniques, which were kept as state secrets. By the 1990s, SAFS had lost their funds from the government and ink-wash animation could not keep up with the market due to its extremely intensive labor, time consumption and costs. (Dobson, 2009)

More recently Chinese animation is still working hard to come up with the world.

Chapter 2 – Visual precedent analysis

Chinese painting alone could be a very deep subject to look into, but this research does not describe it in too much depth due to scope. After setting forth some relevant issues in chapter 1, I will continue to talk about my survey about influences concerning my composition.

I decided to create an ink-style animation based on ancient Chinese methodology after seeing Ron Hui's work *Ode to Summer* [Figure 5.] in this direction. This innovative methodology for replicating the delicate consistency contains the usual elements found in Chinese paintings such as the lotus, koi, lady, rock, tree and calligraphy, all of which are 3D geometry with the unique Chinese brush strokes realized through a combination of models and shaders. Texture maps have been kept to a minimum while using subtle lighting. (Neoh & Hui, 2003) It was the first time that a CG animated short from Mainland China got the honor to be shown at Animation Theater of Siggraph 2003. This successful premiere attracted huge interest from both domestic and overseas and brought the traditional ink-wash animation of 60s back to people's memory again and inspired another Siggraph candidate *The Beauty* (Qichao, 2009) in 2009. The later was a well-made animated film going for *gong bi* style while the former challenged the harder way of *xie yi*. In this sense, Ron's *Ode to Summer* is the main example for my research. But unlike Ron, I took a new approach in this reasearch. I tried to keep more Chinese flavor by weakening the 3D feel by cooperating texture maps with shader and non-photorealistic rendering (NPR) instead of pure shader.

Speaking of ink-wash animation, *Where is Mama* (Te, 1960) was the founder that first realized the ambitious concept to bring contemporary master Qi Bai-shi's ink painting to the motion picture. With the aid of famous painters of that generation, each frame was of high value. Though made in several decades ago, these ink-wash animations still remain the climax of the industry in China. Judging from a modern view, the ink-wash animation shares a common shortcoming: the background is still and the camera's motion is rather simple because the strokes of the hand-painted

pictures are impossible to duplicate into sequences. This great method is doomed to wane due to its inefficiency.

Not only is the ink-wash animation on the fringe of extinction, but the animation industry is also facing many challenges. In the article *Chinese Animation: Splendid Past, Bitter Present* (Li, 2004), Li Xiao indicated several obstacles for the development of Chinese animation. The first was lacking of individual characteristics both in story and characters. I cannot totally agree with this because there is at least one – the *Monkey King* – still lives in the heart of Chinese people. But one thing is clear, with all the cartoon heroes from overseas, the *Monkey King* might not be able to top up first in people's mind. Also it revealed that no other new heroes stand out after this 1960s cartoon character. The article *Chinese Animation: Splendid Past, Bitter Present* (Li, 2004), was published in 2004 and the author could not foresee that after interfering several times, the authority finally forbade foreign animated films and cartoons in Mainland China in 2006 to “protect” domestic industry as they claimed. Under these circumstances, animations like *Pleasant Goat and Big Big Wolf* became popular in recent years because there are no competitors. This new cartoon has its merit, but compared to the current works from overseas, it also revealed that China still has a long way to go. The tight control is definitely not a solution to the future of the industry.

Second, as Li pointed out, dryness of content and persistent education. “*Chinese people usually attach importance to education, especially to children's education. They are in the long habit of saying: you should do A and not B. As a result of such blunt demands, all demon characters in Chinese movies inevitably have the unambiguous look of 'bad people'. While Chinese children are just not as stupid as they can be made out to be, the kids gradually notice that the simple but very 'meaningful' cartoons have insulted their intelligence, and they immediately throw them away without mercy, no matter how 'meaningful' it is.*” (Li, 2004) I cannot agree more with this remark. *Take Where is Mama* as an example, it was a great innovation in terms of visual style, but it is also a representative “meaningful” story. 1988's *Feeling from Mountain and Water* was better in this aspect in my point of view because it had no dialogue so that audience can finally enjoy a cartoon without preaching. Li also suggested that Chinese should get rid of the long-standing idea that animation or cartoon only targets children.

While China was struggling to carve out her own way in this field, Westerners did a good job in exploring with Chinese elements. As one of the industry leaders, Dreamworks launched its “most ambitious project ever” - *Kung Fu Panda* [Figure 2.] in 2008. Director John Stevenson said that he and his team immersed themselves in the culture and were



Fig. 1. Hui, R. (Director). (2003) *Ode to Summer* [Animated Film still]. Retrieved from <http://www.awn.com/vfxworld/times-have-changed-right>.



Fig. 2. Dreamworks (2008). *Kung Fu Panda* [animated film still]. Retrieved from <http://www.awn.com/animationworld/way-panda>.

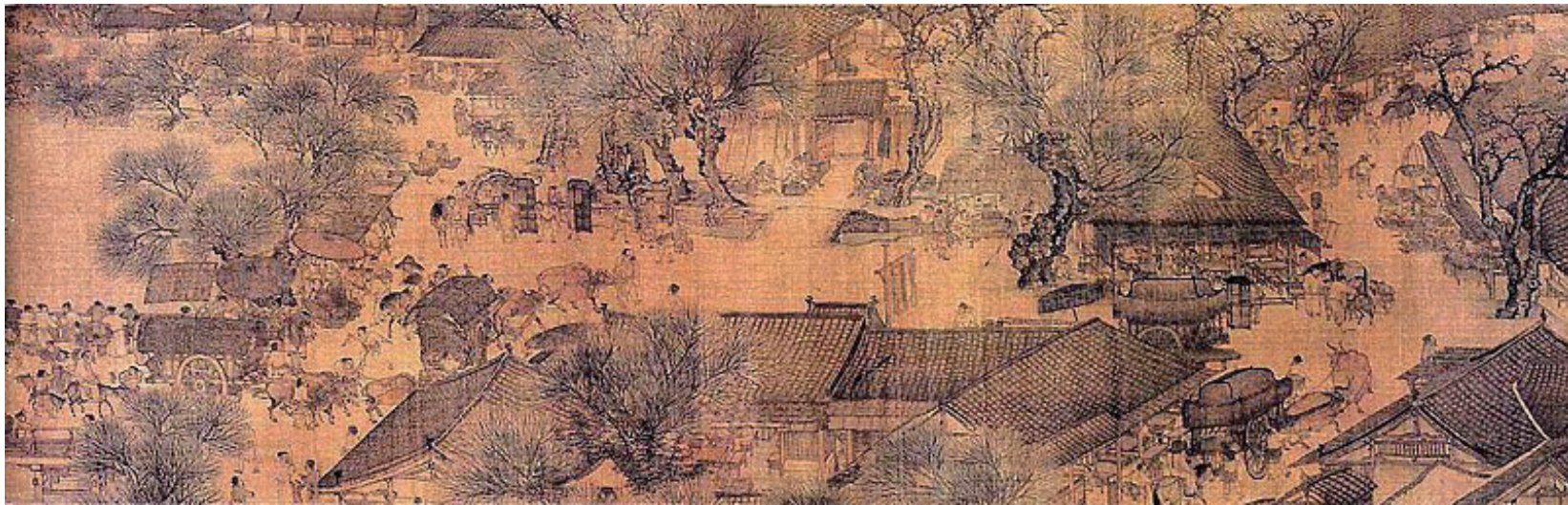


Fig. 3. Zhang, Z. (1085-1145). *Along the River During Qing-Ming Festival* [Painting]. Retrieved from http://www.npm.gov.tw/exh96/orientation/flash_4/index.html.

deeply influenced by Chinese art and architecture. (“The Way of the Panda,” 2008) The familiarity of this series struck many Chinese audiences. Though I went a different way to do my own project, I still inspired greatly by its deep understanding of Chinese culture and its lively narrative from a western standpoint by pushing the color emotionally.

At 2010 Shanghai Expo, we witnessed how technology brings Chinese cultural heritage to life. The Palace Museum, Microsoft Research Asia, and Peking University together developed the interactive browser system and allowed people to walk through China’s most famous historic panoramic painting, *Along the River During Qing-Ming Festival* (清明上河图). (“Technology Brings Chinese Cultural Heritage to Life,” 2011) [Figure 3.] This project is a breakthrough in the history of museum exhibitions. As for the simulation part, in order to match the original background, it went along with *gong bi* style which I think is less challenge than *xie yi*. As a result, when planning my own project, I chose to follow Ron’s path and focused on the realization of brushstroke instead, but the interaction is definitely an interesting research direction for my future study.

Chapter 3 - Methodology

After studying the previous work from both old times and modern days, in this chapter, I will elaborate the whole process of my research from beginning to end. It comprised of two parts. One is experiments in 2D and the other is 3D composition. Both parts are required to keep the essential aesthetic of the traditional ink painting when associated with digital media.

3.1 Visual analysis

In the 2D experiments, I basically tried to realize the form of a painting using Adobe Photoshop and Wacom tablet. I depicted several popular subjects in the traditional Chinese painting such as bamboo, peony, lotus which I could find plenty of references. Though digital devices have their limitation, I still chose to carry out this research using pure digital media instead of scanning hand-painted pictures because I wanted to see how far modern technology can go in this kind of simulation and to better understand the disadvantages as well as the advantages.



3.1.1 Digital simulation _ Bamboo

In Chinese culture, bamboo represents a specific motif that suggests the upright posture of a gentleman. Fig. 4 is part of a long scroll done by Hsia Chang (夏昶) who was famous for bamboo painting dated back to Ming Dynasty. I thoroughly studied this picture and tried to simulate it in all aspects, from paper texture to brush strokes [Figure 5]. The computer proved to be capable of handling this kind of painting with just a slight amount of ink bleeding and *fei bai* (飞白), which literally means “flying white”, representing the white space showing through the strokes when the brush gets dry and leaves the paper exposed. This is a highlight effect that is more accidental than controlled which is usually considered desirable because the energy continues across the gap and suggests great vitality. (Chan, Akleman, & Chen, 2002)

Fig. 1. Hsia, C (夏昶). (1594).
Bamboo Grove in Windy Storm
(part) [painting]. Retrieved from
[http://www.npm.gov.tw/exh101/
form10110/ch/photo07.html](http://www.npm.gov.tw/exh101/form10110/ch/photo07.html).



Fig. 2. Digital simulation _ Bamboo





Fig. 6. Digital simulation_Lotus



Fig. 7. Digital simulation_Mountains

3.1.2 Digital simulation _ Lotus

I continued to try larger scale of ink bleeding effects. [Fig. 6] Digital devices have good performance in some aspects, for instance, the outline's thickness and hues changes according to the pressure I gave to the pen tablet. The preset brushes in Photoshop provide a better result when drawing thinner lines than larger strokes such as the lotus leaves. The bleeding degree was hard to control with a hard-tipped pen so that it lacked the variety of dryness and wetness of Chinese ink.

3.1.3 Digital simulation _ Mountain

In this test, I tried to represent depth in a Chinese painting. The foreground objects were painted with darker colors or ink while faraway objects faded out, giving a good sense of atmospheric depth. This painting contains large amount

of blank space which serves as sky, clouds and water. Unlike oil paintings, Chinese paintings usually contain large area of blank space. This method is called *liu bai* (留白). It is also a unique feature in Chinese painting, but unlike *fei bai*, *liu bai* is intentional. It is regarded as an important component of the whole painting and is often used to balance the composition. With the increase of the degree of ink bleed, computer started to show insufficiency in simulating the brushwork when two wet strokes meet and create a beautiful water stain. In the digital version, the strokes look way too clean and specialists would be able to distinguish it from a traditional brush-drawn painting.



Fig. 8. Digital simulation _ Peony

3.1.4 Digital simulation _ Peony

This test studied the composition and the brushwork. In the flower painting, artists usually start from one bottom side of the paper and end at the other upper side. The contents are highly condensed to get a better focus center. For example, a few bunch of dark-colored leaves highlights the upper corner and makes contrast with the rosy peony in the center, omitting other leaves or flowers which should have existed around in order not to attract too much attention.

Chinese composition focuses on “plotting and planning, positioning and placing (经营位置)”, as Xie He (谢赫, active ca. 479-502) formulated the Six Principles of painting. (Xie, 1959) It represents the harmonious balance of each part of a painting, including the inscription and seals. The process of planning is finished carefully in a painter’s mind instead of preliminary sketches on the paper and not allowed to makeover a flawed stroke because it will leave trace on the thin rice paper as a stiff eyesore.

“The true value of Chinese painting lies in its own special visual language and its unique form of expressivity.” (Fong, 2003) Brushwork is regarded the mostly important and difficult to achieve and understand. To enjoy a Chinese painting, all emphasis rests on identifying the quality of the brush stroke and to empathize with the artists through the expression of brush stroke. Amateurs are prone to think the bleeding effect is the kernel of ink painting so that they tend to achieve this effect by blurring everything in their parody. The truth is that skills lie in the control of the tools and the capability of expressing firm strokes through soft-tipped brushes as well as exquisite depiction only when desired. This is why it is so important that researchers need to have a deep understanding of the subject.

I came across most difficulties in this test due to the unique skills used in Chinese paintings. Multiple colors and tones, which could be easily combined in one stroke with a simple hair brush, are hard to realize with pen tablet. The orange leaf on the upper left was supposed to take only one quick stroke, giving a solid dry darker color from the top then gradually turning lighter yellowish also drier at the end. The preset digital brush strokes were either dry or wet, but not capable of changing in one move so that I had to change different brushes and blend them deliberately. As I mentioned before, it is not desirable to paint over or make any corrections on an existing stroke, but I had to compromise when I used digital media.

3.2 3D Implementation

After the 2D experiments I moved on to the 3D implementation. This process involved modeling, shader designing, producing and applying textures, camera setting, storyboarding, rigging and animating, rendering and post editing. The original idea to create a whole story was so ambitious that finally compromised to subtle movements and focusing more on displaying the ink-wash shaders and delivering a peaceful atmosphere.

3.2.1 Modeling, UV and texture mapping

The 3D models were developed with Autodesk 3DSMax. I constantly updated the models to better fit the aesthetic during the process. I was prone to build models in a realistic way at beginning, but later adjusted to a more artistic look, as those bold nodes around the models which indicate the trace of the brushstroke where painters make a short pause and do a vigorous turn. Fig. 9 shows the results of an early stage with only texture mapping. I used textures with alpha channel to keep polygon account minimum. Some elements in the texture are tileable so that the meshes can obtain enough resolution without occupying too much UV space.

I finished the textures in Photoshop drawing on the knowledge from the 2D experiments and tried to give it a full interpretation of ink-wash style. I did not choose to make it black and white, instead, I employed some colors to make the whole atmosphere a little bright and lively, but in the meantime, the colors were subdued in order to retain its elegant nature. I used a brownish paper color at early stage as those ancient work present, then rectified it to white later because I wanted to give it a fresher look while not just duplicating an old masterpiece. The colors were also further rectified in the later progresses.

Fig. 9. Early stage of 3D model with texture (a) wireframe (b) texture (c) wireframe + texture





Some other potential elements I made included a bamboo grove, a pair of birds and a fish. [Fig. 10] They were eliminated finally in order to keep a more focused theme and quiet atmosphere.

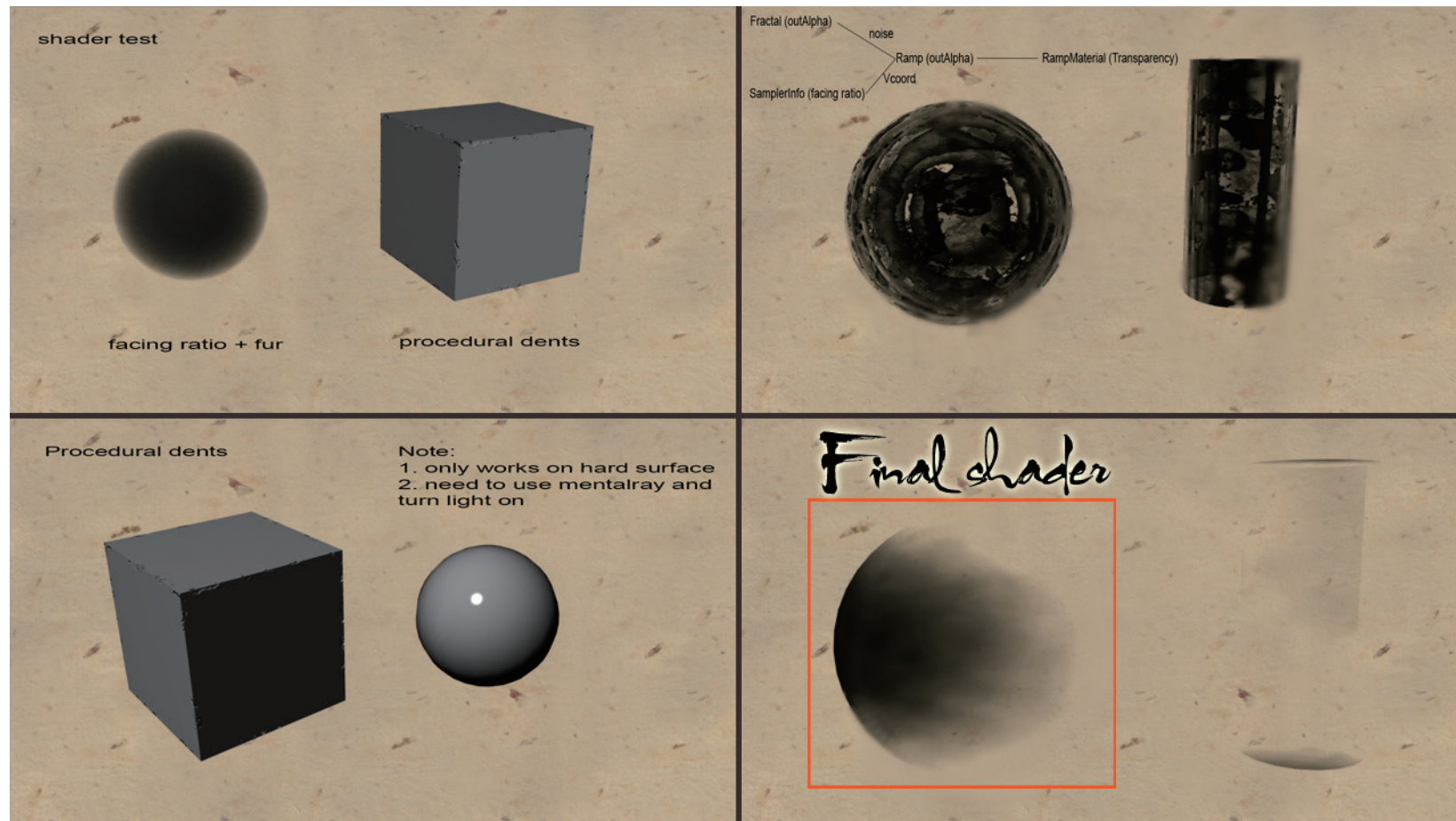
Fig. 10. Other 3D objects (a) bamboo grove (b) fish (c) birds

3.2.2 Shader design

In traditional Chinese painting, the brush strokes may be considered as the skeleton, the tone and color add flesh. (Wang, 1947) While in a digital narrative, the modeling could be seen as the skeleton, the shaders and textures are the skin. From this point, I used Maya to take full advantage of its powerful shader system to express the feeling of a Chinese painting. Among a variety of choices provided by Maya, I was most interested in tone shaders and Painteffects to generate outlines and ink bleeding effects. I did not use any lighting in the scene as the Chinese

painting values brushwork and connotation over the outer forms and scientific accuracy. (Fong, 2003) Fig. 11 shows an early study of potential shaders, and fig. 12 presents the final result applied to the models. I focused on creating a more convincing effect rather than blurring the whole subject. As can be seen in the picture, some strokes kept a clean and firm edge and made good contrast to the bleeding parts. Besides, I made an effort to clarify the distinction between “bleeding” and “blurring”.

Fig. 11. Shader tests



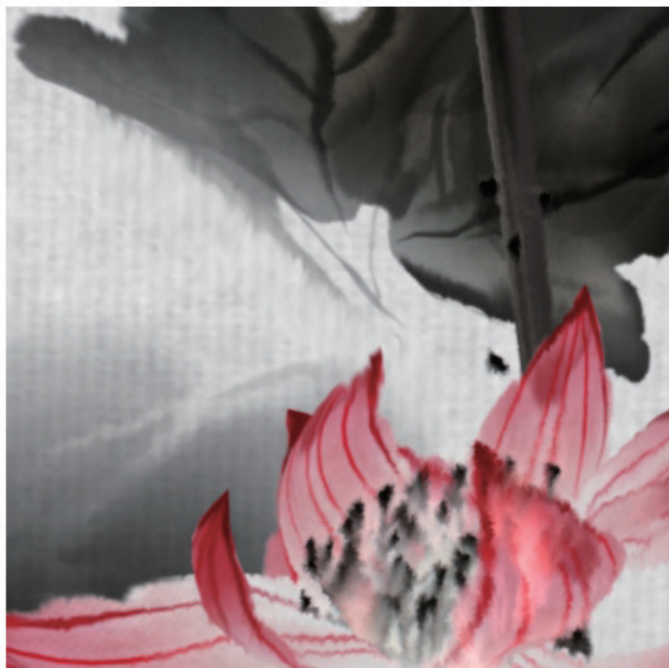
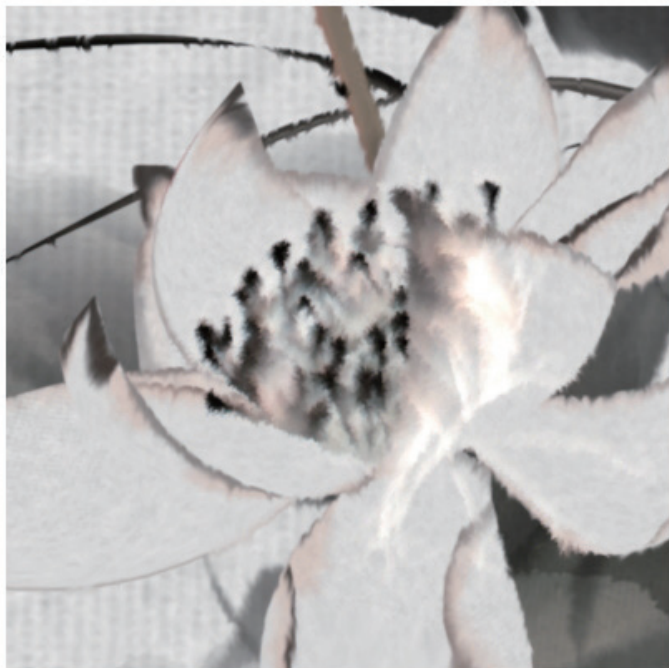


Fig. 12. Final
shader rendering

Fig. 13. Storyboard



3.2.3 Storyboarding and camera setting

Fig. 13 was the storyboard of the original concept, but I finally adopted a more subtle animation with a still camera because I worked on this project alone within a limited period of time, I could not build a big enough scene to support too many movements. In fact, digital media guarantee a smooth and accurate camera motion that traditional methods cannot achieve. Most traditional ink-wash animations chose to use a pan shot to avoid various camera rotation and motion because hand-painted frames could not provide a constant move of those organic ink bleeding and brushwork. Despite that I did not deploy a full use of camera in this project; it could be a very potential area of further study.

3.2.4 Rendering and post production

I used Maya Software to render the texture maps and shaders and Mental Ray for ambient occlusion and depth maps. Splitting into several render passes [Fig. 14] makes it easy to composite in the post production software such as Adobe After Effects. This is another powerful advantage that traditional methods could not match. Digital media provide efficient pipelines for producing animation. The final touch up largely enhances the quality without going back to previous steps.

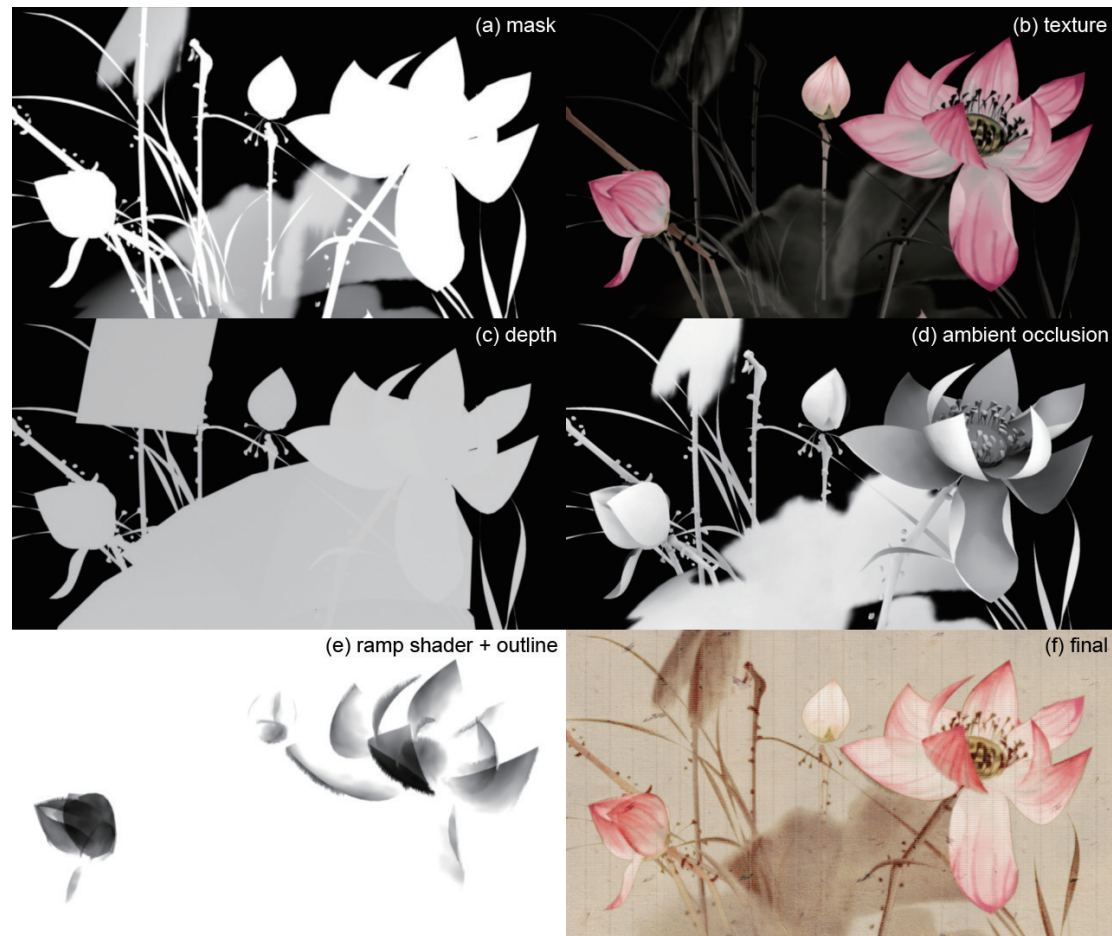


Fig. 14. Maya render passes

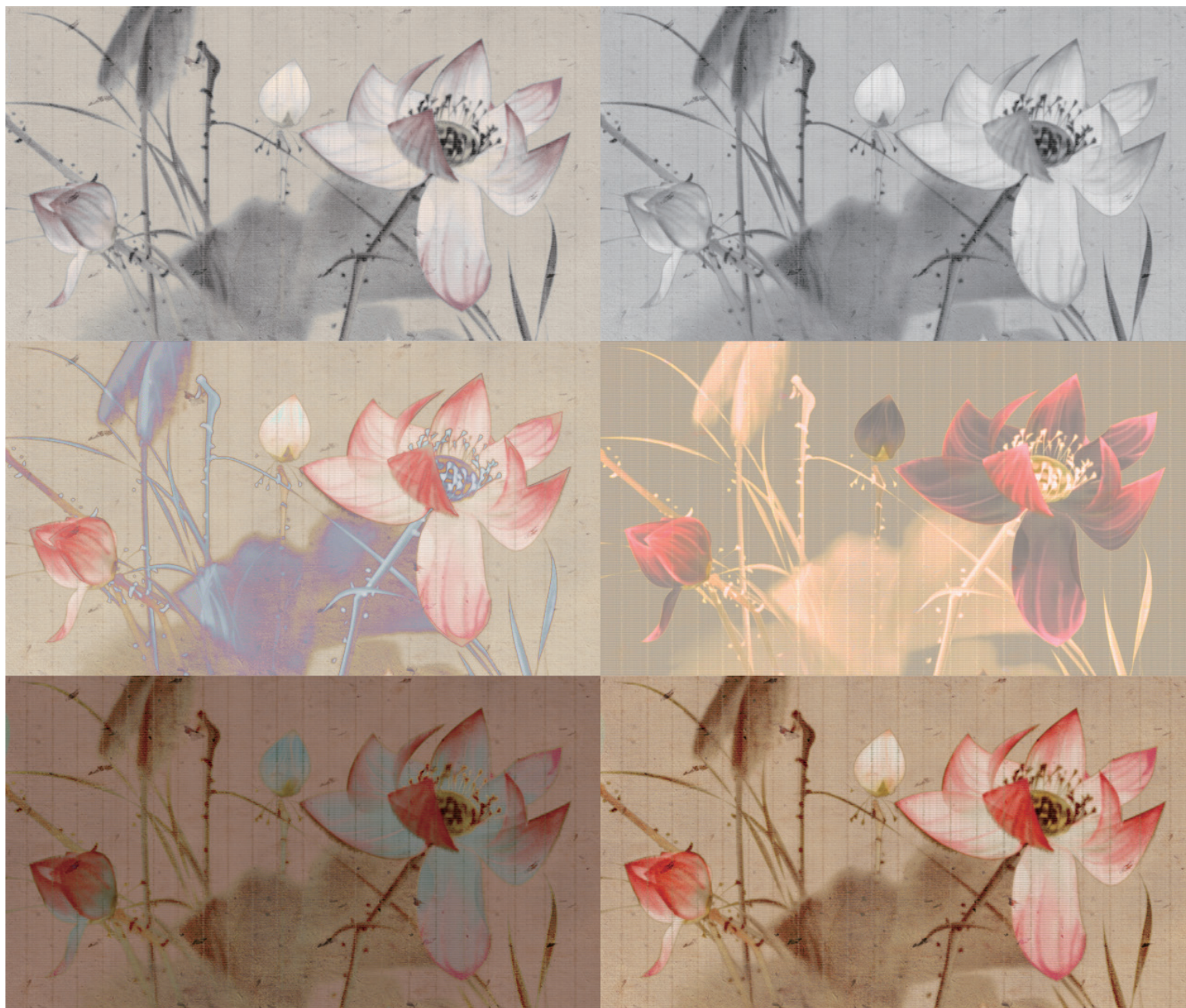


Fig. 15. Color variation

3.2.5 Layout and presenting

The animation is to be presented on four screens in line with the format of the traditional hanging scroll. There are many forms of Chinese painting, among which, the hanging scroll has many ways to display. It can present alone or work in a set, often four or eight. It can also present in a line or as an array. This flexibility and variety feature more interesting experience.

As for the sound effect, I looked for some new acoustic experience rather than just using a typical stale soundtrack that could be heard in almost everything related to Chinese culture. This is really not my field, but I had a lot of complaints when I found the same soundtrack was used again and again for more than half a century. It was gradually labeled as the only choice or people just could not think out of the box to find another match, and made history or culture-related themes even tedious and outmoded. A new type of music, *gufeng* (古风), emerged on the internet roughly since 2005, calling for modern music by using traditional Chinese instruments. (Xiong, 2013) It fits the theme of my research, just in a different field. I chose background music from MMQMusic (墨明棋妙) which is one of the pioneer groups.



Fig. 16. Final layout

Chapter 4 – Results

The previous chapter demonstrates the whole process of my research and from it I am able to draw some conclusions on this topic.

First, the 2D experiments are successful, but not desirable as it takes much more time in this way than the old, so that the hand cannot keep up with mind as *xie yi* literally demands – sketch the idea. After doodling with digital tools and getting to know their characteristics, in this case I used the preset brushes in Photoshop, I feel they are totally capable of making an ink-wash painting despite of its free and organic nature as long as the painter has solid knowledge of the traditional methods. This understanding makes sure the painter knows how to “fake” things that will easily expose the weakness of the current technology; for instance, the ink bleeding effect. It could not be generated naturally with computer, but needs to simulated somehow, for example, intentionally adding some ink drops as “happy accidents”.

Another important fact is that the modern tools lack the emotional connection with the painters as the traditional tools do. Artists tend to regard the brushes as part of their body and feel more natural and comfortable to deliver their thoughts, while the digital pen currently retains no such connection.

Though the result of the first part seemed inessential, it does serve as a stepping stone and may lead to a very promising future to the 3D ink-wash animation. Bringing 2D paintings to 3D saves huge amount of tedious work and costs to repeat the same thing in numerous frames, and enable artists or animators to focus on maximum the quality of each elements. 3D software determines a precise perspective so that the angle of view would be more various in support of different storytelling methods. So Digital media not only help to resurrect the traditional ink-wash animation, but also strengthen its competitiveness in the commercial market.

3D technology brings art alive, as demonstrated in the interactive *Along the River During Qing-Ming Festival* in chapter 2. It changes the way of how people enjoy art and allows more interaction with audience, let alone 4D technology is on the horizon which will bring other revolutions. With a deliberate set of camera, it could lead the audience into the art work while not just outside.

Modern tools unchain the taboo of refining on existing strokes with multiple layer system and magic functions such as 'undo' and 'redo', thus avoid kicking an almost finished piece of work back to square one by a tragic misplay in the last minute. In the end, the powerful post editing tools further help to enhance the quality. Modern tools are very flexible in moving, rotating the models and generating new scenes with existing objects; textures shift easily among different styles, delivering multiple visual experience.

This new research has already brought so many highlights in the early stage, so I believe it will be better with the rapid improvement of the technology and deeper research on this topic. The shader system is powerful and full of possibilities. There are many other interesting things attract me to further study after the thesis including better shaders, dynamic and particle system, and working on a good screenplay with better use of camera.

Chapter 5 – Conclusion

Simulating traditional Chinese painting with digital media is a vast and promising topic. My research incorporates conventional Chinese aesthetics and digital techniques to demonstrate how conventional art form can be expressed through modern media. I believe that my final work is both innovation and refreshing that it not only restores the original aesthetics with modern language but also demonstrates that how digital technologies can enhance rather than obstruct spiritual and aesthetic expression.

It is vital to understand and respect the values of Chinese culture to carry out a research like this. I believe modern technology is not a shortcut to avoid hard work. The rich legacy of Chinese culture handed down from generations provided a high visual standard for me, and the studious training of tradition Chinese painting in my early age and later experience as a 3D artist helped me to connect the old and new of vast difference and cooperate to fulfill this research.

We are living in an increasingly technologically advanced world today. I hope that my research would inspire other artists / designers to seek innovation in ink-wash animation and intrigue more people to take up the traditional method as well so that the precious cultural legacy will carry on forever.



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Serenity

