

Abstract

Successful science fiction films have excellent concept art that integrates all the fantasy elements into a clear visual style, including characters, environments and various props. The aim of this thesis is to discuss concept art in science fiction films.

The first part of the thesis introduces myself at different periods in my creative development and the reason that I'm interested in film and choosing concept art for my professional direction. The primary purpose of this thesis concerns my creative processes and inspirations, in designing and illustrating environments for a science fiction story of my own creation. The thesis also investigates the utilization of environment concept art on Science Fiction films in three aspects: film color keynote, camera angle and visual effects. Through these three aspects the thesis studies three typical science fiction films.

In conclusion, the thesis shows how the background of films, games or animations, a like character's personalities. The artwork component of this thesis is a series of background concept art, based on the studies of existing science fiction films and concept art. The final point of the thesis is to propose professional opportunities that would allow me to explore the interests outlined here.

The Role of Concept Art in Science Fiction Films: A Study of the Process and Creation of
Environment Concept Art

by

Ruo Chen Liu

B.A, Communication University of China, 2015

Thesis

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I. Introduction

i. Background

Juvenile Period

Picasso said, “Art is the lie that enables us to realize the truth.”¹ When I a was s child, I took this to heart. I put my ideas on paper in abstract ways. From the age of five, I studied various art related courses such as piano, painting, zither, a traditional string instrument and many others. My mother thought that art was very important. By receiving an art-related education, I improved my aesthetic abilities and my creativity grew. My father was a very intelligent person who could help me with my math homework and taught me to play chess. He even taught me how to fix electronics. He also thought that people should strive to be happy, that you should not compare yourself with others, and he believed that disadvantage is a blessing. I was very grateful to my father. Most Chinese parents like to restrict their children's ideas and force their children to do something that they don't like. On the contrary, my father would listen to my opinions and get along with me as a friend. When I was entering junior high school, my father decided that I should enroll in a fine arts middle school to receive art education because I told him that I really liked drawing. From that moment, I started to study drawing in school.

High School Period

Rembrandt Van Rijn was a painter who had a great influence on me in my high school years. His compositions and the use of light influenced my way of drawing portraits. I was inspired most by

¹ quotersearch, Author. “Art Is a Lie That Makes Us Realize Truth.” Quote Investigator, 29 Oct. 2019, quoteinvestigator.com/2019/10/29/lie-truth/.

his painting *The Night Watch*. Composition was a major feature in it. Rembrandt broke the rules of traditional portrait painting, by his dynamic positioning of his figures. But what I really like about this painting is Rembrandt's use of contrast of light and dark. When I practiced portraits and still lifes in high school, I referred to Rembrandt. This made me very successful in my art examination and I got satisfactory grades in high school. I also began to be interested in movies



Fig1. Rembrandt Van Rijn, "The Night Watch", 1642, Oil on Canvas, 379.5cmx453.5cm, Image courtesy of Rijksmuseum. From: <https://fineartamerica.com/featured/the-night-watch-rembrandt-van-rijn-war-is-hell-store.html>

because of the arrangement of some courses. Rembrandt's light is used in many films, such as "Hannibal", "Troy". Rembrandt's light adds mystery to the film. The dark part gives the audience a chance to imagine the trend of the plot. In addition, The use of this kind of light can augment the sense of space in the films and help the director to convey the inner emotions of the character to the audience.

Undergraduate Period

When I entered college, I chose a film related major which was called Theatre, Film and TV Fine Arts Design. The person who most influenced me during my college years was my professor Zhang, who worked as an art director for a famous Chinese movie director named Yimou Zhang. She taught the class *Artistic Design to TV & Movie*. She always told us that every scene of a movie was done through elaborate scrutiny by the designer. In her class, I learned about concept art. My first assignment was to design scenes for "Alice in Wonderland". However, Prof. Zhang criticized that my work lacked cultural connotation, and all elements were added casually without consideration for Alice's character, age and social background. Her words shocked me because I thought concept art was about the aesthetic not the idea. After that I did research online, and learned

to design scenes based on my research. After this course, I learned always to do research. Prof. Zhang also taught me about the importance of color in film. Zhang used red heavily in her work to make it stronger, more comfortable and give audience a glimmer of hope. She skillfully conveyed a struggle with contrast conflict between gray and red, and the result of the red and thick gray balance was no doubt a conflict. From her teachings, I created my final assignment, a series of concept art works for “the *Beauty and The Beast*” I learned how to use color to render the atmosphere. Prof. Zhang taught me how to use drawing to create excellent scene design. Through her course, my understanding of films improved. Ever since then, whenever I create illustrations, I still consider her theories.

ii. My direction

In my undergraduate period, I took courses in different fields, such as stage design, directing and



Fig2. Mullins Craig , digital

From: <http://www.goodbrush.com>

photography, but I finally choose concept art as my direction which was influenced by Craig Mullins, who is a concept artist for films and skilled at using simple block surface and colors to show rich and realistic lighting effects. My professor always recommended that I study his works. I really like

how he shows human manner, forms and character with a few simple brushstrokes. His influenced by traditional painting methods of color, composition and structure, and uses digital media to draw commercial conceptual illustrations. When I began to learn how to draw digitally, I copied a lot of his works. Through the analysis of his work, I made different brushes in Photoshop, which made my illustration more impactful and complete. I especially learned how to use Photoshop brushes to make textures, which led my drawing to be more vivid. I was also interested in the field of film, because film, like painting, a medium of communication.

II. My Project

i. Environment concept art in science fiction films

“Concept art is a visual representation which tells a story or conveys a certain look. It is commonly used in film and video games to convey a vision and set the tone for an entire game or movie. Concept art provides a strong reference point that helps align the creatives working on the project.”² Concept art makes possible the idea of a great movie. It involves the visualization of scenes, characters or environments that make up the design and overall appearance of a movie. But it's not just a statement, this is a visual support to help the filmmaker shooting films, and as a reference for the whole film production process. In the digital age, science fiction films occupy a large proportion in the film market, which is an exploration of the unknown world. The filmmakers require rich imagination and outstanding spatial analysis ability.

² Fitzgerald, Ryan. “What Is Concept Art? Job Role & Salary Expectations.” CG Spectrum, www.cgspectrum.com/blog/what-is-concept-art.

In the preliminary preparation, the concept artist helps the film creators rationalize their ideas, and makes a comprehensive analysis of the space and world outlook, so as to show the overall shooting style in the form of images. Once the look of the movie starts taking shape, the production may use early concept work to show executives and producers how the movie they are investing in is going to look.³ Artists need to achieve a high degree of preview of the final effect of the screen, so as to assist the director, and the shooting can be more accurately controlled. The conceptual design is similar to the real shot: in visual effects, composition, and color. The designer needs to make a complete analysis after getting the whole script, and recreate the scene according to the plot development of the previous and subsequent segments.

- **Film Color Keynote**

In addition to the ups and downs of plot and background music, in excellent sci-fi movies, the most important thing to arouse the audience's mood is the color keynote. Each single object in screen can be the basic color and we can easily use an influence between the single color with human psychology to build an emotional section. When a concept artist creates background, they can use hue to express the emotions that the director wants, and they can use color to increase visual impact. As an important part of film preparation, concept artists can directly reflect the color keynote of the whole movie in their works. For example, the movie “*Avatar*” is one of my inspirations, and its main hue of the colors is blue. Usually, blue represents melancholy, when blue appears in

³ Hurst, Adriene. “Adriene Hurst.” Digital Media World, www.digitalmediaworld.tv/in-depth/396-concept-artist-richard-anderson-brings-studios-visions-to-the-screen.

artwork or film that could be indicative of something negative happening.⁴ However, when blue and purple mix together, it can express a mysterious feeling to audiences. “Avatar’s color is very pertinent to the overall motif of the film. Avatar has a very big theme of being free and being stuck, literally and figuratively. This theme is highlighted through the juxtaposition of saturation of color. In the beginning of the movie, there is a darker hue of colors and the colors almost seem they’ve been stripped of their original vibrancy, looking bleak.”⁵ On the other hand, in the film, different textures of green also have different distinct roles. In the night on Pandora, some strange plants emit green light or dark green, which covers the forest of the outer space planet with a mysterious veil. Different shades of green also reflect the life of Pandora Vitality, which is in contrast to the gray environment of human life, leaving the audience shocked and overwhelmed by the beautiful environment.

- **Visual Effects**

Visual effects also play an important role in science fiction films. Many of the environments in science fiction movies don't exist in real life, so that filmmakers need to depend on set construction and special effects to shoot. The concept art can help the director to see some final effects in the early stages,so they it can be adjusted in the shooting to avoid cost overruns. The process helps work out visual effects the production hasn’t completely developed yet.⁶ Take a Chinese science fiction movie "*The Wandering Earth*" released last year as an example. The background of story is that

4 Frugone, Angela. “The Directorial Intentions of James Cameron.” Medium, Medium, 21 Apr. 2016, medium.com/@angelafrugone/continuing-my-independent-study-i-decided-to-break-down-the-essential-elements-of-blockbuster-hits-73bf069a86af.

5 Frugone, Angela. “The Directorial Intentions of James Cameron.” Medium, Medium, 21 Apr. 2016, medium.com/@angelafrugone/continuing-my-independent-study-i-decided-to-break-down-the-essential-elements-of-blockbuster-hits-73bf069a86af.

6 Hurst, Adriene. “Adriene Hurst.” Digital Media World, www.digitalmediaworld.tv/in-depth/396-concept-artist-richard-anderson-brings-studios-visions-to-the-screen.

the whole solar system, including the earth, will be engulfed by the sun, and it is no longer suitable for human survival. In the face of this situation, human beings started the "wandering earth" plan, trying to escape the solar system with the earth and find a new home. No matter from which point of view, it is a script that completely depends on visual effects, and the key frame concept design is very important in this movie. It needs to combine the effect and shot of real shooting. In the key frame design, the concept team-MOREVFX combined with real shooting and separated the special effect layer, providing detailed instructions for the design. For instance in the following shot, when MORREVFX designed this scene, the artist tried different visual schemes. In order to reflect the destructive effect of the shock wave on the scene in this moment, the artist searched for the explosion effect at different time intervals and summarized the law of motion to present the final explosion effect. The artist had to adjust the proportion of light and the overall hue to draw the most suitable scheme for later shooting conditions.⁷



Fig3. MORE VFX, Finished lens renderings for "The Wandering Earth" From: www.morevfx.com

⁷ "Case." MORE VFX, www.morevfx.com/showcase/



Fig4.More VFX, Concept Art for “*The Wandering Earth*”, digital From: www.morevfx.com

- **Composition**

Concept art not only transforms the script into a visual image, but also provides a blueprint, to give filmmakers a perfect scene structure. The concept art of “*The Wandering Earth*” helped in for the composition of the shooting. The comparison of the following set of actual lens effects and the art works demonstrate this point. The high-speed shooting of the moment when the car wave is chopped simplifies effect processing. This work clarifies the content with a complex background and leaves out the key part on the right side of the image. The artist selects a relatively blank point to deal with some of the emptiness, contrasting the primary and secondary relations of the other highlights.⁸

⁸ “Case.” MORE VFX, www.morevfx.com/showcase/

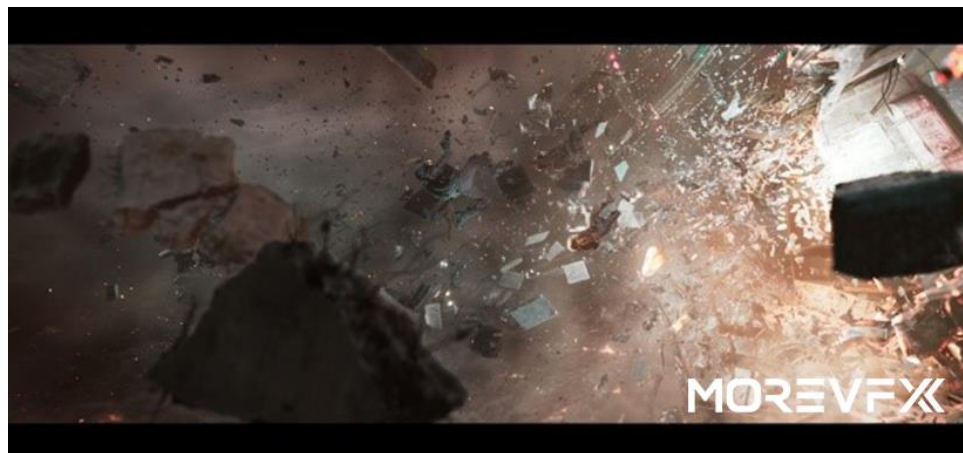


Fig5.MORE VFX, Finished lens renderings for “The Wandering Earth”, digital From: www.morevfx.com



Fig6.MORE VFX, Concept Art for “The Wandering Earth”, digital From: www.morevfx.com

The second shot(Fig6) is of vehicle that was cut apart. The scattered structure makes the shooting composition split, so the artists use the vertical line to combine the pictures and find the visual guide line of it, and then distribute size and density to emphasize the main structure to locate four composition points, finally selecting one of them as the most powerful core point.⁹



Fig7.MORE VFX, Finished lens renderings for “*The Wandering Earth*” From: www.morevfx.com



Fig.8MORE VFX, Concept Art for “*The Wandering Earth*”, digital From: www.morevfx.com

ii. My work

Through the research of the above content, I started my thesis project. My story takes place in after the World Energy War, nobles moved from the earth to a new planet, which has clean soil and environment that's suitable for human survival. The People at the bottom of the earth were left without energy. Nobles were in charge of all energy sources, bottom people tried to rebel. The story begin as follows.

The main character Shine 's brain with implanted in a chip that could control machinery, then his mother handed him over to her friend Dr. Yong. Dr. Yong hid the boy with a family on earth, because the nobles needed the chip. However, the noble knew about it so Dr. Yong was arrested and put in the prison.

20 years later, the main female character Reiko who was an adoptive daughter of Dr.Yong, was also a researcher belonged to the noble. When she went to the earth to look for materials, she found Shine unintentionally. She discovered the technological talent Shine, so she took Shine back to the research group. By chance, she saw the scar on the Shine's head, so she doubted Shine's identity. Through genetic analysis, she confirmed that it was the baby of the year. Finally, she persuaded Shine to join the research group.

In an experiment, a researcher found that Shine could directly control the machinery without any energy, so he reported it to the noble. So, Reiko decided to take Shine away to the mutant base. The leader of the mutants was Dr. Yong's friend. They grew up together and were caught by the nobles for human experimentation since nobles have always wanted to develop a puppet that can control machinery to start a spaceship on the earth which is the reason noble needed Shine. The spaceship can reach another space-time (parallel world) to acquire to special source of energy, which was the goal of the nobles. They decided to rescue Dr. Yong who was only person who knew the location of the spaceship. Finally, they embarked on a journey to find the remains of a spaceship that could cross the parallel world in order to fight against the aristocratic monopoly on energy.

Fig9. A meeting room for nobles

This is the building used by the leading class for meetings. There are 10 nobles who are the team that decide on important issues. I referred to church design and the Palace of Versailles to create it. I chose the angle of looking up and the green tone to echo the angel statue in the middle to show how holy and pure this space is to the nobles. However, the light from the outside is not a warm sunshine but the dark gray tone because I want to show the hypocritical character setting of the nobles.



Fig9.Ruo Chen Liu, A meeting room for nobles,2019, digital

Fig10. A planet inhabited by nobles

This planet has a perfect living environment which is different from the earth. I referred to Medieval architectural style in Europe, and Renaissance buildings and unify the interior to exterior styles of the building. In order to see the whole layout of the building in the composition, I chose a low angle of looking up at the whole scene.

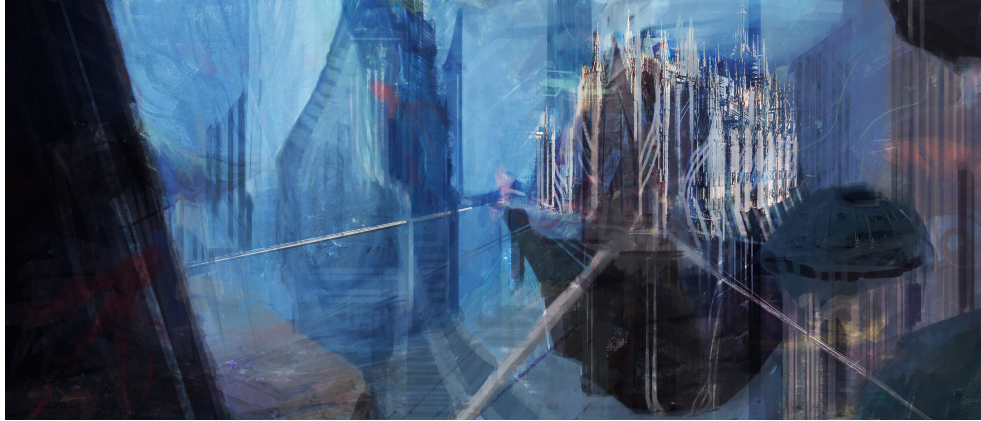


Fig10. Ruo Chen Liu, A planet inhabited by nobles ,2020, digital

Fig11&12. Transit planet and Transfer station

The transit planet is the transit station of the noble planet and the earth world. There is no class hierarchy here, through which businessmen resell the energy stone to the earth. I designed the planet as a modern city and combined some Chinese and Japanese elements, such as Japanese street signs and Chinese temples to enrich the image. The planet was the first stop after the main character and the female main character escape, where they lived for some time to find the whereabouts of the mutant to save the adopted father of the female main character imprisoned by the nobles. From the design point of view, the main color is blue, which represents the sense of technology. In addition, some mechanical design, such as a remote energy ring, is added to build a sense of a futuristic city. In addition, a space supply station is set outside the planet for docking spacecraft for energy supply. The main color is still blue, and the spacecraft in the visual center is white, which creates a strong contrast and highlights the theme.



Fig11. Ruo Chen Liu, Transfer station, 2019, digital



Fig12. Ruo Chen Liu, Transit planet, 2019, digital

Fig13. Main character's temporary residence

This is the room where the main character is taken back to the research group. I designed the room to be simple and similar to a hotel room. In my setting, the male character is an informal and untidy mechanic. I showed this by littering wastepaper and randomly stacking books on the ground, leaving a water glass half-full and food half-eaten, chaotic beds, half opened closets and scattered mechanical parts. I think it is a key step to lay out the room

according to the characteristics of this character in the early design because it also provides a reference for the following props production steps.

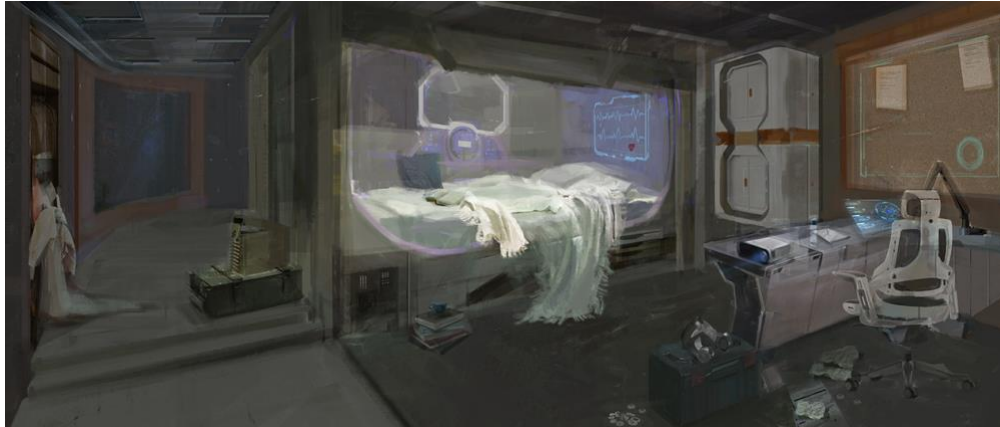


Fig13. Ruo Chen Liu, Main character's temporary residence, 2020, digital

Fig14. Mutant base

The mutant base is located in the snow mountain of the earth. In order to hide it, I set it to so one would have to pass through a cave to reach it. The mutant human is a failure of a noble human experiment because nobles have always wanted to develop a puppet that can control machinery to start a spaceship. This scene depicts the characters passing through the cave and discovering the hiding place of the mutant, but they were discovered by patrol. The mutant base has few resources, so I set their residences as shanty houses, and added some watchtowers, using air traffic control towers as reference. To emphasize the main part, I reduced the lightness of the stone blocked on the right side and contrasted the primary and secondary relations.



Fig14. Ruochen Liu, Mutant base,2020, digital

Fig15. Prison

This shot is about the protagonists sneaking into prison to save the female main character's adoptive father. My inspiration comes from a grotto. The sharp stalactites will make the audience have a sense of oppression, suggesting the depressed atmosphere of prison. I also added Chinese elements to this piece. There is a myth that Chinese immortals use towers to lock up monsters, which is exactly the same as the function of prisons. I designed the tower in red because red represents restlessness, and the arrival of the protagonists broke the silence and tension of the prison.

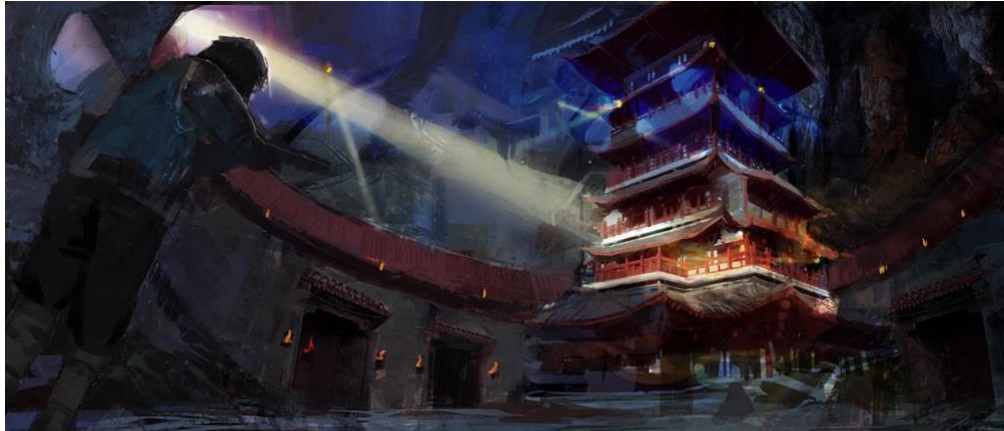


Fig15. Ruochen Liu, Prison,2019, digital

Fig16. Destroyed city

The earth is a planet abandoned by the nobility. The lack of resources leads to the poor people's plundering on the street and the city becoming ruins. In order to highlight the destruction of the earth's city, I chose New York as the source material. I simplified the buildings on both sides in order to highlight the center to distinguish the administrative levels.



Fig16. Ruochen Liu, Destroyed city,2020, digital

Fig17. Laboratory

This lab is for human experiments. I made blue as the dominant hue to set off the coldness and mercilessness of the laboratory. In this image, I added an interaction between the experimenters in order to increase the authenticity. After I tried different compositions, I finally chose this one, which has a clear primary and secondary relationship. The blue experimental cabin has the highest color saturation of the whole image, which can be explicitly seen by the audience as the main part.



Fig17. Ruo Chen Liu, Laboratory, 2020, digital

Fig18&19&20. Spaceship remains interior, exterior, and the moment the spaceship takes off

The last three works depict the remains of the spaceship. Due to the age, both the exterior and the interior have been seriously damaged, but the main character's brain has been implanted with a chip, so it can repair the core of the spaceship and start the spaceship. The remains of my ship were frozen on the surface of the glacier. There is no light source inside the spaceship, so I designed a natural view to increase the brightness directly coming in from the damaged part. I have rust texture inside the spaceship to increase the fragmentation. The last shot of the whole story is the arrival of the noble pursuers. Meanwhile, the main character started the spaceship to

leave this space-time. I designed it with a wide large viewing angle to make the picture more impactful.



Fig18. Ruochen Liu, Spaceship remains interior ,2020, digital



Fig19. Ruochen Liu, Spaceship remains exterior ,2020, digital



Fig20. Ruochen Liu, the moment the spaceship takes off,2020, digital

a. Difficulties in the process of creation

In the process of creation, the biggest problem was the design of the spacecraft. Both the appearance and the structure are great challenges for me. I went to learn some works of concept artist sparth. His spaceship design is excellent. He suggested that when we do not have ideas, we can use segmentation and silhouette to simplify the external contour. The same silhouette can form different volumes by using different components, and then we can get different results by using reference and adding details. His generalization ability is very mature. No matter whether in natural environment or mechanical design, he does not pursue too many details, but simplifies the designs. It is admirable that his picture is still very complete and rich.

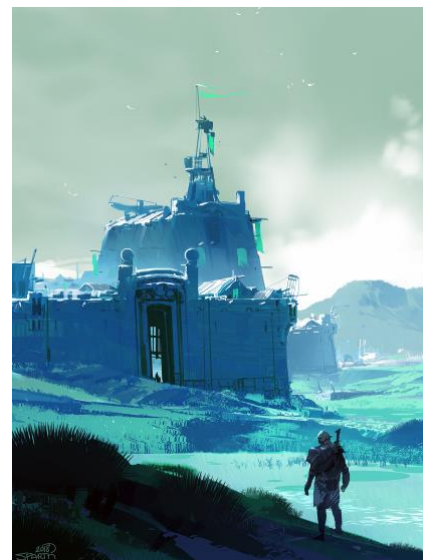


Fig21. Sparth, "Medieval dream", 2018, digital From: <https://www.artstation.com/artwork/BNxbr>

Another artist who had a great influence on me was

Richard Anderson. His style is very loose.

He doesn't constantly define details, but he shows the atmosphere of the works in a general way. He has a great influence on my painting style as well. At the beginning, I kept drawing the details, and would not summarize them as a whole. By



Fig22. Richard Anderson, "Guild wars path of fire load screen illustration", 2018, digital From: <https://www.artstation.com/artwork/dn62x>

studying his works, I found some ways to simplify them.

b. What I gained from creating my project and the problem in my project

I learned some creative methods in the process of creation like a method of summarizing colors and details. I also

learned about creating textures and the control of digital brushes. There are still many problems that I haven't considered in creation. Because I haven't participated in the real film production, many composition problems can't be combined with the film production, and I lack the understanding of the camera angle. There is also a lack of dynamic lens rendering. The story is not perfect and lacks detailed description. Another issue that my understanding of visual effects is still not deep, not much reflected in the works. I hope to find a mature novel or script for analysis and creation, and practice in my leisure time.

III. Conclusion

I have worked as an intern in Chinese television station. TV program production and film production are also used as media industry. Although their production methods are similar, I prefer movies. Combining painting and film, film conceptual design connects my love for both. After graduation, I want to apply for a job in a studio related to film or animation. So far, I'm not yet involved in the experience of a real film production team. What I can do now is to accumulate experience, look for opportunities, and modify my portfolio to find creative opportunities and work.

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Vita

Name of Author: Ruochen Liu

Place of Birth: Jiangsu, China

Date of Birth: June,21,1993

Graduate and Undergraduate Schools Attend:

Communication University of China

Syracuse University

Degrees Award:

Bachelor of Arts 2015, Applied “Theatre, Film and TV Fine Arts Design” Communication

University of China