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Design and Production of 3D Animation Short film “The Blue Battery”

BY

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A Thesis Submitted in Partial Fulfillment of the Requirements for the
Degree of Master of Fine Arts in Visual Communication Design

School of Design

College of Art and Design

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Abstract

The Blue Battery is a character animation short film telling a story of a robot pursuing freedom in a totalitarian environment. The idea of the film expresses reflection and vigilance against totalitarianism. During World War II, Nazism prevailed in Europe, the extreme abuse of power by the ruling class led to a large number of people suffering from war. After the war, the Soviet Republic gradually moved toward totalitarianism and eventually died out. In these past countries, political scientists have found that violence and secret police often exist. Especially the control of thought, the fanaticism of personal worship, and the boring and decaying education are all significant features of the society. These failed examples provide some experience for the current social system. However, in some countries today, totalitarianism has not been completely exterminated. The young generation has not genuinely experienced the era of totalitarianism, some of them even became supporters of this type of domination for the reason that they did not have a deep understanding of the horrors and consequences totalitarianism might cause. The author demonstrates a short film which reproduces the totalitarian society, with robots as the protagonist, showing the totalitarian horror in the process of searching for freedom. The film intends to guide people to consider and to be alerted.

The author uses non-realistic cartoon expressions to show the adventure story of a robot with a duration of 4 minutes through 3d rendering technology and montage techniques, The film conveys thoughts on humanity and freedom, and presents a critical attitude towards totalitarianism.

Keywords:

Robot 3D Totalitarianism Character Animation Animated short films

Introduction

Emphasize discipline and order, pursue equality and consistency, eliminate differences and personality. These are precisely the attributes of collectivism under totalitarian rule. Although totalitarian countries in the world are now on the verge of extinction, Ron Jones' famous experiment "*The Wave*"¹ shows that totalitarianism is very easy to recover from groups that are vulnerable to incitement, especially teenagers. In some companies, bosses force employees to work overtime, exploit employees to get more benefits. In some universities, schools force students to cut their hair uniformly and even prohibit recreation during breaks. Under the modern social system, people are still suffering from totalitarianism. Therefore, the author of the thesis intends to show the horror of totalitarian society from three aspects to serve as a warning.

On the one hand, the short film reproduces the dullness and monotony of a totalitarian society. Using robots as the protagonist is insinuation in this environment which means apart from the number, the main character has no differences from other robots. The character design for the robot is a reflection of reality. Nowadays, many people repeat doing the same thing every day without considering their own life goals, similar to the robots. On the other hand, the author of the thesis use the blue battery as a metaphor for freedom. The blue battery used to be a crucial part of all robots. In the process of chasing freedom, the protagonist becomes more powerful because of the blue battery. And this powerful power is inherent in it. Ironically, under totalitarian rule, no robot come to understand this, and all robots live on ordinary batteries. Lastly, the secret police who chased the protagonist in the film and the weapons monopoly of the ruling class demonstrates the ruler's long-term oppression and surveillance of the masses. The whole movie is repressed and worrying, telling the story of the pursuit of freedom in a dark tone.

¹ "Figure 2f from: Irimia R, Gottschling M (2016) Taxonomic Revision of *Rochefortia* Sw. (Ehretiaceae, Boraginales). Biodiversity Data Journal 4: e7720. <https://doi.org/10.3897/BDJ.4.e7720>," n.d. <https://doi.org/10.3897/bdj.4.e7720.figure2f>.

Content

1.The Narrative Technique

The author of the thesis uses linear narrative and flashback methods, with blue batteries as the story clues, and uses a first-person perspective to stagger the two storylines. The film starts with a normal battery and ends with a blue battery, producing an echoing harmony. There are two plots in the film: the overt plot about the protagonist robot 098, and the covert plot about the governor robot 001. On the surface, the protagonist 098 was chased by the police from all around the whole city because he swallowed the blue battery, then accidentally entered the factory. After the protagonist got the blue battery, he recalled his childhood memory and discovered the truth of the city. The movie uses flashback and montage techniques to show the inner activity of robot 098 and give the audience a hint. The other storyline demonstrates how robot 001 changed the robot kingdom which was in harmony with its totalitarian law. The intersection of the two storylines is that 098 had met with 001 in his childhood, and its blue battery was taken away by 001 unconsciously. Although the two characters met for the first time on the overt plot, they admittedly became enemies long ago in another storyline. The two-line narrative method and crosscutting technique make the animation not only attract young people with a simple and clear plot but also play a guiding role with its profound connotation.

2. Plot and Metaphor

There exist a lot of metaphors and foreshadowing in the short film. To begin with, the ordinary battery (Figure 1) that appears in the first shot is generally different from the blue battery. However, the robot can still live on it. The

streamlined work process and the depressed working environment imply that this is a place where obliterates personality. The audience is only able to have a glimpse of the world where the robot once had blue batteries from robot 098's memories. The appearance of the blue battery is designed based on gemstones, conveying the concept of "valuable freedom" (Figure 2). Governors have developed alternatives for freedom, which are often provided free of charge, only to paralyze the crowds and force them to forget freedom is irreplaceable. The author of the thesis proposes to express that although people can survive after being deprived of freedom, they are like walking dead.

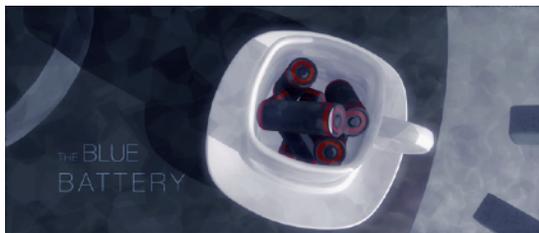


Figure 1: The Ordinary Battery



Figure 2: The Blue Battery

In the movie, robot 001's posters were posted throughout the city. Its huge statue was erected, which is also the only character statue in the downtown (Figure 3). The statue's long nose implies robot 001's lies while other robots do not have a nose. But the robots are not aware of it. The town is called a wheel city, but none of the robots has wheels. The obvious contradiction between the background and the numb robots is the best expression of the people whose mind is controlled by the totalitarian rule. The president robot 001 completely understands one thing: *From the proletarians, nothing is to be feared. Left to themselves, they will continue from generation to generation and from century to century, working, breeding, and dying, not only without any impulse to rebel but without the power of grasping that the world could be other than it is.*^[2]

² Dean, Mike, and George Orwell. 1984. Harlow: Pearson Education, 2008.



Figure 3: Robot 001 Statue

The art field has been completely transformed into a tyrannical propaganda machine. The education level of the people has declined. What people think or do is regarded as an irrelevant thing. Because they have no intelligence, giving them work and academic freedom poses no threats to the ruling class. In an actual totalitarian society, ordinary people have no opportunity to advance into political parties. The most talented among them, if they are likely to become the core of dissatisfaction, will be eliminated by the ideological police one by one.

At the moment robot 098 swallowed the blue battery, the city sounded the alarm, and the violent police attacked 098 with life-threatening ways. On the one hand, this proves that all robots are monitored: whether there is a blue battery in the body. If surveillance detects that a robot in the city has a blue battery, then violence will follow. On the other hand, the author pays tribute to "*big brother is watching you*" in <1984>^[3]. A totalitarian society is not without a legal system. While its power is not subordinate to the interests of one person but is always ready to sacrifice the

³ Dean, Mike, and George Orwell. 1984. Harlow: Pearson Education, 2008.

major primary benefits of each person to implement the historical and natural laws it recognizes. People lose themselves under the pressure of power and become a number or a tool.

In the process of robot 098's escape, the police who pursued it cut off the nose of the robot 001's huge statue (Figure 4). The author created this frame for the reason that 098 was about to get closer to the truth and destroy the deception. In the meanwhile, the author additionally mocked that robot 001's violent organization damaged his symbol of power. No one had thought that the inside of the sculpture was the answer to freedom. A pretty manageable metaphor: you can get yourself liberty by breaking personal worship.



Figure 4: Breaking Nose

Eventually, the metaphor of the bomb is pretty obvious (Figure 5). Robot 001 has achieved weapon monopoly, which is fundamental support for totalitarianism. It uses violent threats and fraudulent methods to obtain blue batteries and deprives other robots of their birthrights. Obviously, in any country today, if the individual is against the authority of government, it is like throwing straws against the wind. The military power of the government's development is intended to protect their people, but once such a substantial military organization is aimed at the citizens of its own country, the credibility of government will drop significantly, which will lead to fear and

helplessness. People in this situation would be easily controlled by the government both mentally and physically. Because the author set a non-real world, robot 098 ideally ran away from the police pursuit in the adventure but found a more terrifying weapon. In a state of a totalitarian society where seems to be stable and peaceful, while robots have lived cautiously in long-term terror oppression.

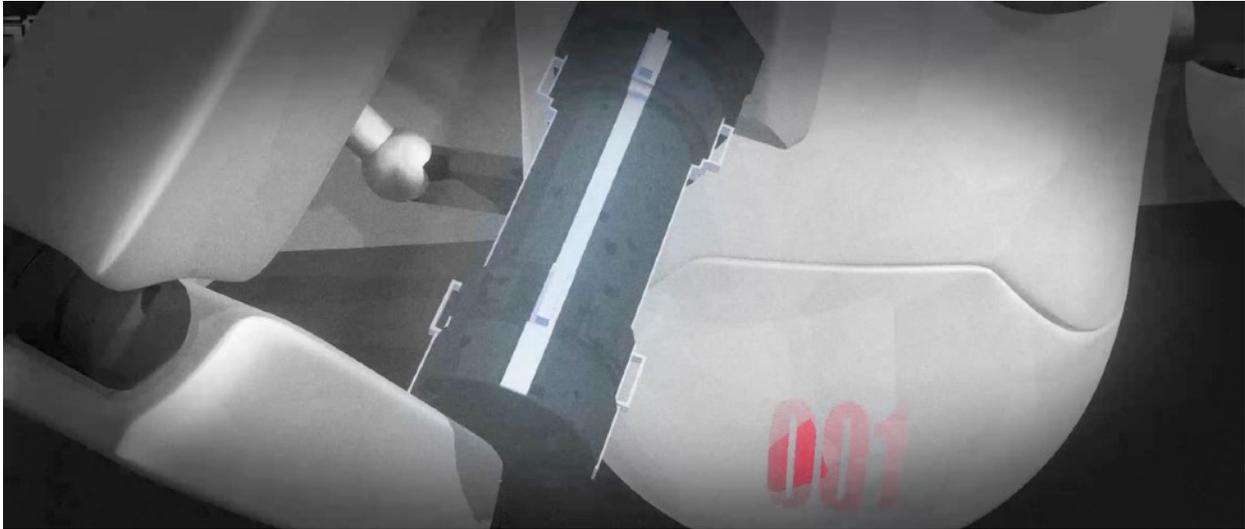


Figure 5: The Bomb

Methods

1. Story Setting and Robot 001

In this part of the thesis. The author will demonstrate in detail of story background and the logical construction of the film. It mainly explains how robot 001 transforms the robots with sharp knives and wheels into a gentle and obedient crowd step by step.

From the setting of the background story, the number 001 indicates that it is the first robot to be born. As a pioneer, it knows everything about the blue batteries that each robot carries. The robot is given the ability to do the

transformation of sharp knives and wheels by the blue battery which is also rich in enormous energy. Robot 001 comprehended the technique to convert blue batteries into bombs through experimentation on batteries(Figure 6). Once mastered the weapons above the group, robot 001's ambitions began to increase. This is the sprouting of its totalitarian thought and the cause and consequence of the whole film. Throughout human history, no totalitarian superior has ever possessed tremendous military force and supreme power. These two are most appealing to human desire to cross the baseline of morality and break rules of civilization.

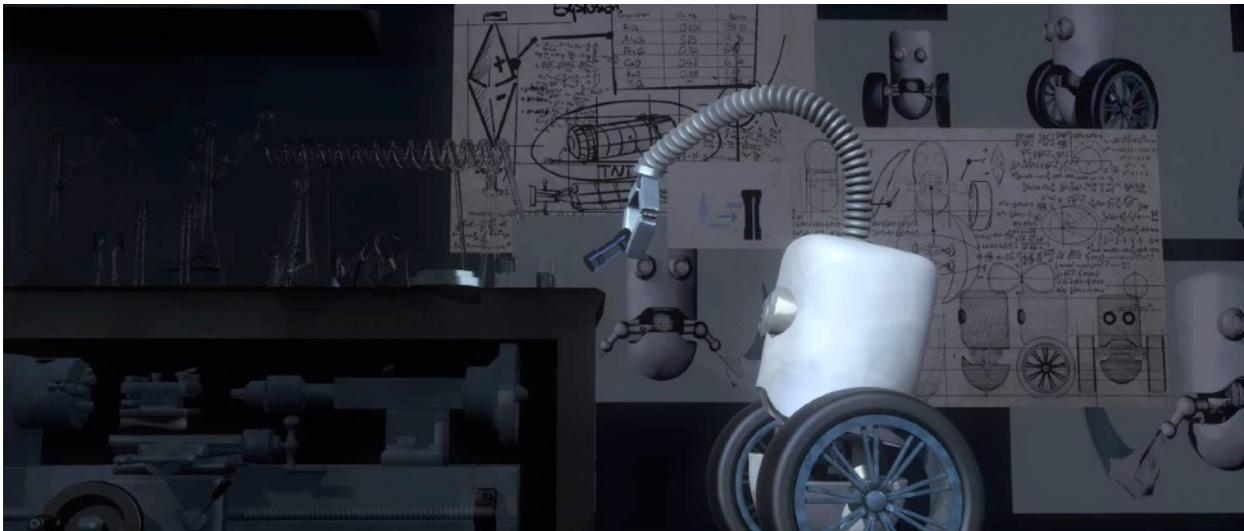


Figure 6: Experimentation

The primary pillars of the totalitarian rule are terror and violence, while concentration camps are the model institutions of the terror machine of a totalitarian society, whose model role is to show the violence of totalitarianism to the greatest extent. In the film, the place where robot 098 works reflect the labor camp (Figure 7). At the same time, the author designed the existence of a super bomb, hoping to show the power of the weapon and its deterrent effect in an intuitive way. In reality, the violent rule of totalitarianism is incontrovertibly not to eliminate all people physically, but to eliminate the real characters with the following "three-step procedure".

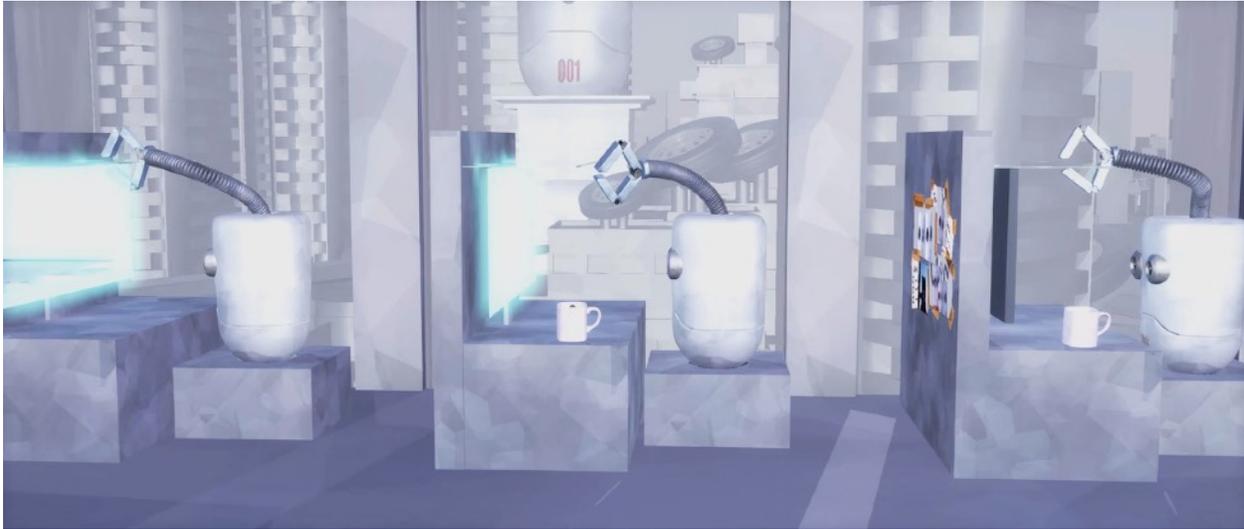


Figure 7: The Working Place

The first step is "*the killing of the juridical person*"⁴, that is, deprive people of their basic political rights and civil rights. "*Destroy a person's rights and kill him as a legal person. This is the prerequisite for the total domination of a person.*" This is what happened to Jews in Germany long before the final solution. For the main character is a robot, the author expresses the human rights possessed by real citizens in a mode of representation. Before the era of robot 001 ruled the world, robots could transform part of their shapes into wheels and sharp knives. The sharp knife represents the right to fight back, and the wheel defines the right to run away. 001's deprivation of two rights held by other robots prevented them from resisting and escaping (Figure 8). Other robots were deceived by 001 without the knowledge of the blue battery while many of them lost their ability to resist. As more robots were fooled, the crowd began to marshal versus robot 001 who began to threaten the organizations with the developed bomb. However, pure terror oppression and privation of rights only result in anger and revolution, therefore the second-step procedure is on track.

⁴ Arendt, Hannah. *The Origins of Totalitarianism*. San Diego, NY, London: Harcourt Brace, 1985.

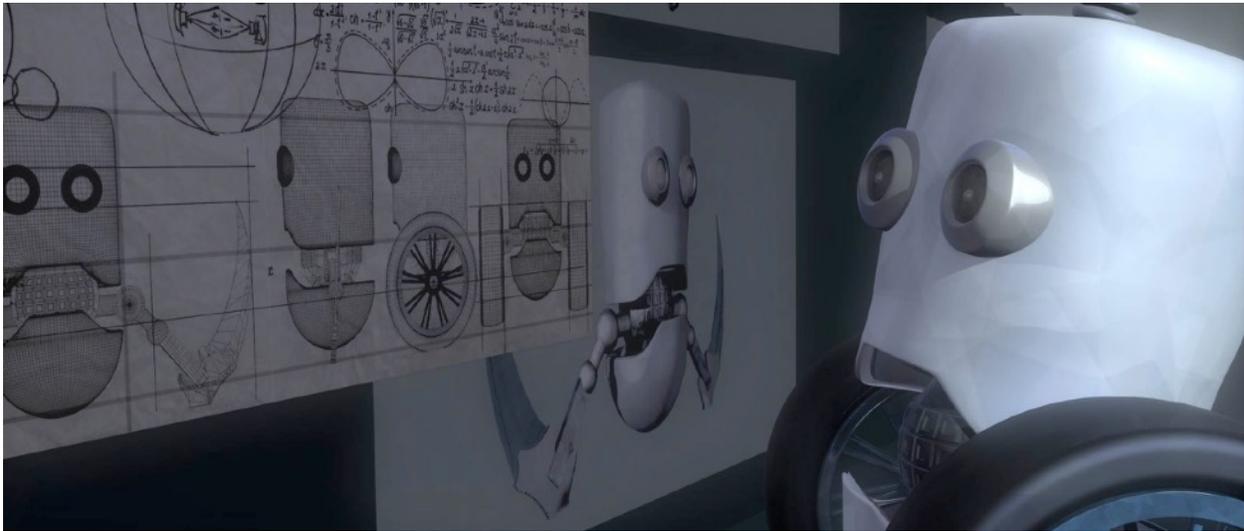


Figure 8: The Sharp Knife and The Wheel

The second step is "*the killing of the moral person*" so that the murdered "*can't become martyrs for the first time in history.*" Under political pressure, people seem to be able to use "*conscience as resistance. Conscience can even make people prefer to be killed rather than live because of harm*". But this kind of conscientious resistance will also be destroyed under extremely harsh totalitarian rule, for conscience is complete personal escapism. "*When a man is faced with the alternative of betraying and thus murdering his friends or sending his wife and children, for whom he is in every sense responsible, to their death: when even suicide would mean the immediate murder of his own family – how is he to decide? The alternative is no longer between good and evil, but between murder and murder.*"⁵ In the memory of robot 098, when robot 001 invaded the room, there were two robots with sharp knives followed to protect the leader (Figure 9). Under the pressure of totalitarianism, robots became to do something against their conviction and conscience. The emergence of this situation forced all the robots to conceal from each other, and ultimately, the resistance organization was because of the mistrust, miscalculations, and mistakes. In reality, it is

⁵ Berkowitz, Roger. "Why Arendt Matters: Revisiting 'The Origins of Totalitarianism' - LARB." Los Angeles Review of Books, March 18, 2017. <https://lareviewofbooks.org/article/arendt-matters-revisiting-origins-totalitarianism/>.

impossible to have a morally innocent person under totalitarianism. The victims often participate in the bullying of others to some extent. Therefore, no one's background can have the kind of moral prosecution power that a martyr should have.

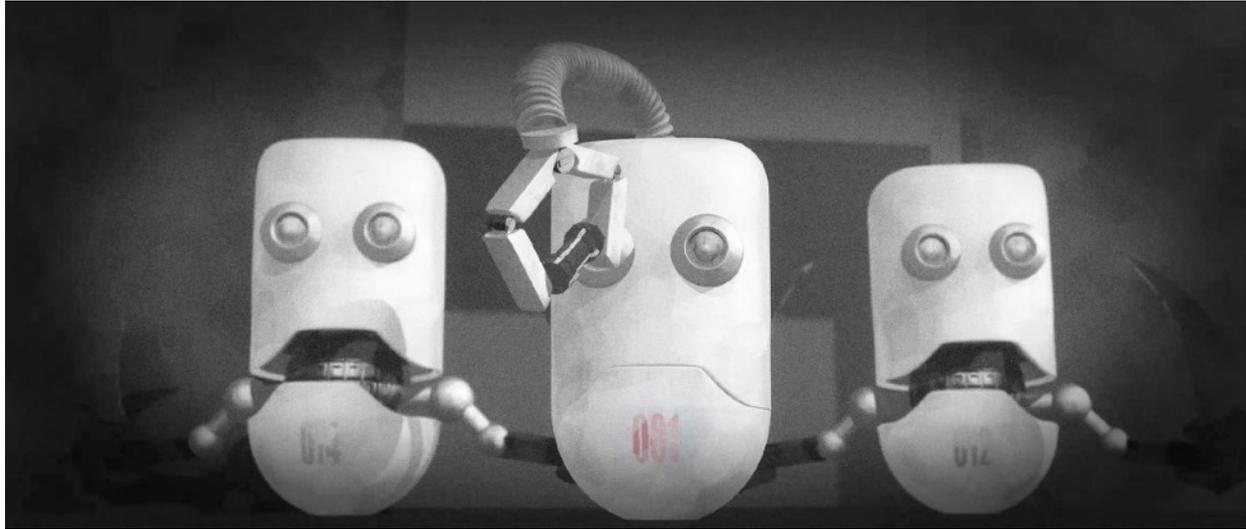


Figure 9: The Robots followed Robot 001

Soon, all the robots were deprived of the two batteries they were born with. Sharp knives and wheels disappeared in this city and the rebellious robots no longer resist. The third procedure "the killing of the individual" has already begun. It destroys people's thoughts and creativity and eventually turns people into walking dead. The people under totalitarianism will not resist whatever cruelty or insult. *"For to destroy individuality is to destroy spontaneity, man's power to begin something new out of his own resources, something that cannot be explained on the basis of reactions to environment and events"*^[6]. Archetypal totalitarianism usually strives to eliminate human personality and creativity, and the evolution of post-totalitarianism and "new totalitarianism" is based on this premise, although the latter two do not look as brutal and bloody as the totalitarian archetype. That is because the prototype of totalitarianism has used violence and fear to create an obedient populace for its successor.

⁶ Bernstein, Richard J. Hannah Arendt and the Jewish Question. Cambridge: Polity Press, 1996.

The large posters hanging in the city controlled by 001 are all praising "Our Great Leader". In 098's childhood memory, 001 threatened his family with the bomb and even killed his parents. History is not a mirror, but a mark on a blackboard that can be erased and filled at any time. Even more terrifying is that once altered, you cannot find evidence to prove that this is an act of tampering with history. After getting the blue battery at first, robot 098 didn't even understand how to use it, so it could only escape by rolling and jumping. The childhood experience of robot 098 was erased in some way, and the passing of the old generation made liberalism incompatible. This is exactly what the Soviet Union faced before. Totalitarianism affects not only one generation but also the future of each generation and this society.

2. Design process

The script was written firstly, thus the author created several storyboards for the film (Figure 10). The story was revised to be much simpler than the original copy after discussion for the thesis due to the short period. In the character design of robot 098, to minimize the modeling time and rendering time of the robot, the complex versions

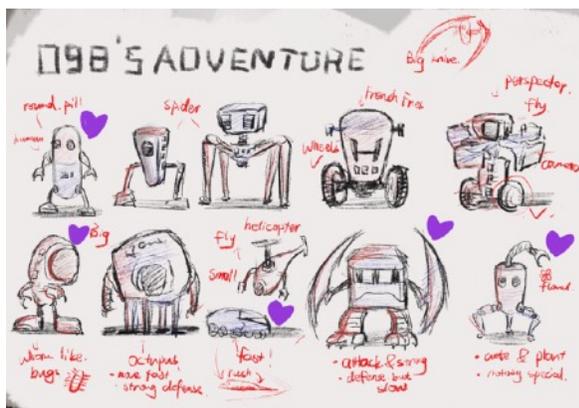


Figure 10: Character Design

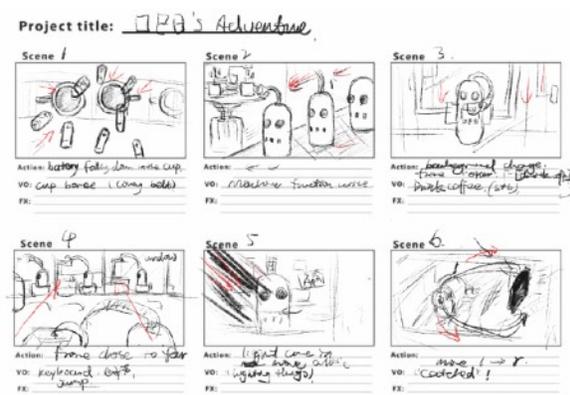


Figure 11: Storyboard

of the robot were abandoned (Figure 11). For the protagonist fighting style, the author draws on the Chinese traditional dual sword genre and the weapon usage of the game "Hollow Knight"^[7]. The game also influences the color grading of the whole film which is low-saturation and high-contrast. For the art style, the film adopts the animation technique of *Neil Stubbings*^[8], which forms the watercolor appearance through the hierarchical arrangement of the material noise layers that come with Cinema 4D. The author uses different noise layers and adds various color layers on one material to get multiple artistic effects when rendering. Unique lighting technique and environment setting methods from *eyedesyn* are also implemented in the film^[9].



Figure 12: Slow Motion

Additionally, the author has used exaggerated camera movements such as blow-up, Fix, and track shot in many scenes. On the one hand, it helps add execution to the fighting scene. For example, in the confrontation between 098 and the police, use slow motion to express its rapid response to arrest (Figure 12). On the other hand, due to time

⁷ "Hollow Knight – An Atmospheric Adventure through a Surreal, Bug-Infested World." Hollow Knight – An atmospheric adventure through a surreal, bug-infested world. <https://hollowknight.com/>.

⁸ Stubbings, Neil. "Design / Animation / Storytelling." NEIL STUBBINGS, March 3, 2020. <http://stubbings.ch/>.

⁹ "Cinema 4D Tutorials and Training for the 3D Artist: Motion Graphics Training with an Eye for Design." *eyedesyn*. Accessed April 28, 2020. <https://www.eyedesyn.com/>.

and technical limitations, the flexible use of the cameras can make up for the lack of 3d character rigging operation.

The combination of the use of a wide-angle camera and the Fix movement covers up the fighting actions which are not detailed enough. Besides, a 2.35:1 screen ratio and the 2350x1000 pixel screen size were implemented at the rendering procedure which provides the audience great viewing experience.

For the music and sound effects, the author only utilizes *Vivaldi L' estro armonico OP.3* as the background music for the whole film^[10]. This violin concerto is cheerful and passionate. The speed of the Allegro matches the rhythm of the battle pretty well while showing the mood of the warrior 098 fighting for freedom. In the early version of the storyboard, most of the battle scenes were drawn by the author meanwhile listening to the song. To some extent, this concerto is the predecessor of this film. Every time robot 098 swallows the blue battery and starts to fight, this violin piece sounds. When robot 098 loses the blue battery, the song stops abruptly. This song represents freedom and power. At the same time, in the last scene of the film, the violin still murmured indistinctly. The combination of music and the last scene indicated the arrival of a new era and the spread of freedoms.

For the sound effects, the author chooses the sound source from adobe sound with high-quality. All the sound effects are sorted well in the stock, however, it still cost amounts of time to identify which sound effect is the most appropriate for each frame. Since the battle scene is fast and chaotic, the author implements several sound effects to create new audio for them including the glass breaking sound, the chase sound, the helicopter sound, the blade sound, etc.

In the film content, 098 escape and fighting scenes accounted for the vast majority. This film seems to be about 098's adventure, but it is actually a demonstration of the rights of freedom. 098 escaped the chase of multiple police after

¹⁰“L'estro Armonico, Op.3 (Vivaldi, Antonio).” IMSLP. Accessed April 28, 2020. [https://imslp.org/wiki/L'estro_armonico,_Op.3_\(Vivaldi,_Antonio\)](https://imslp.org/wiki/L'estro_armonico,_Op.3_(Vivaldi,_Antonio)).

obtaining the rights that were once deprived. In the last two minutes of the film, it used blades to fight a lot, and these were in sharp contrast to the escape scene. The role of the blue battery is revealed in the film as mystery energy at the moment. Besides, the use of jumping and wheels also forms a contrast with the beginning of the film when the robots were transported to the workplace by machine. In order to resonate with the audience, in the early stage, the author tried to weaken the ability of 098. Every time it passed by the police pursuit, the action of rolling on the ground without hands and feet was distressing. Thus, when he gets the blue battery, the changeable and flexible movement furnished the audience with a sense of resonance—a refreshing feeling of freedom.

Result

The film was startlingly produced for 3 minutes and ultimately extended to 4 minutes for the reason the story is longer than the original plan. After being exhibited on the Imagine RIT exhibition, the gorgeous fighting and fast-paced narrative attracted many people to stop and watch. A child told me that he hopes this can be a game and he really wants to manipulate this robot to fight. Some people feel sad for the ending, hoping that the author can make 098 survive. All these prove that this movie can resonate with the audience and is very touching.

The thesis link is below:

<https://xinyuliao.myportfolio.com/the-blue-battery>

Conclusion

The author believes that this movie has achieved its purpose. As a cartoon style short film, it not only attracted the attention of children but also conveyed the idea of being vigilant against totalitarianism.

The ending of this film arrangement is that those in power are also repulsed by the weapons they possess. In the final scene, the author arranged 001 and 098 to face off in a large and empty space. What appears to be a battle between two individuals is actually the war between the oppressed masses and the ruler of authority. The producer sets lots of tubes around 001 to signify that it is no longer just an ordinary robot but a monster. Therefore, the moment 098 entered the 001 attack range, its ending was already doomed. It failed to survive because, in a totalitarian society, individual heroism is a dream. When all the robots are assimilated, the space for the survival of conscience is squeezed out, thus the existence of 098 will be wiped out sooner or later. The producer gave 098 the most ideal ending: it died together with 001 and destroyed the sculpture and the factory. It reverses the last step of 001's domination of the world. 001 destroys the robot's subjective initiative while 098 gives other robots a chance to start again.

In the last scene, blue batteries floated from the exploding factory and a robot's hand was to reach it. This is the hope given to follow-up life from robot 098. A single spark can start a prairie fire. Other robots do not know what 098 has done. When the oppression comes, all they can do is only run away in panic. This is also a realistic description of human history. The development and progress of society are spiral, and every revolution requires tens of thousands of forwarders to sacrifice blood. These pioneers are lonely and incomprehensible, but brave enough to change the world. The end of the film is only a prelude to the revolution, there will be more robots to find that what they have

forgotten, the freedom they should have will return to them. The suppressed era of inevitable fear is over, and a new life is about to begin.

Reference:

“50 Amazing Piece Of Robot Artwork (Part II): Robot Illustration, Robot Concept Art, Robot Art.” Pinterest. Accessed April 28, 2020. <https://www.pinterest.com/pin/726698089852961144/>.

Arendt, Hannah. *The Origins of Totalitarianism*. San Diego, NY, London: Harcourt Brace, 1985.

Berkowitz, Roger. “Why Arendt Matters: Revisiting ‘The Origins of Totalitarianism’ - LARB.” Los Angeles Review of Books, March 18, 2017. <https://lareviewofbooks.org/article/arendt-matters-revisiting-origins-totalitarianism/>.

Bernstein, Richard J. *Hannah Arendt and the Jewish Question*. Cambridge: Polity Press, 1996.

“Cinema 4D Tutorials and Training for the 3D Artist: Motion Graphics Training with an Eye for Design.” eyesyn. Accessed April 28, 2020. <https://www.eyesyn.com/>.

Dean, Mike, and George Orwell. *1984*. Harlow: Pearson Education, 2008.

“Figure 2f from: Irimia R, Gottschling M (2016) Taxonomic Revision of Rochefortia Sw. (Ehretiaceae, Boraginales). Biodiversity Data Journal 4: e7720. <https://doi.org/10.3897/BDJ.4.e7720>,” n.d. <https://doi.org/10.3897/bdj.4.e7720.figure2f>.

“Hollow Knight – An Atmospheric Adventure through a Surreal, Bug-Infested World.” Hollow Knight – An atmospheric adventure through a surreal, bug-infested world. Accessed April 28, 2020. <https://hollowknight.com/>.

“L'estro Armonico, Op.3 (Vivaldi, Antonio).” IMSLP. Accessed April 28, 2020. [https://imslp.org/wiki/L'estro_armonico,_Op.3_\(Vivaldi,_Antonio\)](https://imslp.org/wiki/L'estro_armonico,_Op.3_(Vivaldi,_Antonio)).

Stubbings, Neil. “Design / Animation / Storytelling.” NEIL STUBBINGS, March 3, 2020. <http://stubbings.ch/>.