6-25-2009

Hey, brother

Hyungho Shin

‘Hey, Brother’ Thesis Report

by
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06/25/09

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ABSTRACT

The production of the thesis film, “Hey, Brother” by Hyungho Shin, a 3D computer animation film, is a story about two brothers (Peter and Sam) who restore their relationship through the challenges they face. The purpose of the report is to sum up the whole film making process from creating a story to the final production.

THESIS REPORT

1. Introduction

1.1. Concept

In these times, the meaning of family is becoming weaker due to several reasons such as smaller families, individualism, materialism, and so on. Perhaps, in the future this issue will become more serious than it now is. Through this short animated film, I would like to describe an example of fraternal love when two brothers are faced with unexpected events. Even though most brothers are likely to fight with each other from time to time, they usually come to help each other in times of trouble.

Also, I believe that the relationship between people can be restored through their interests and devotion to each other. Therefore, if someone wants friends for his own purposes and benefits, he cannot have a true friend. In this film, depending on Peter's mind, the results go in a very different way. So, I hope the audience who watches this short film can feel how their relationship of family is important.

1.2. Art Style

My film consists of 3D computer animation. I used Maya, Photoshop, After Effects, Soundtrack, and Final Cut Pro as the primary software. I wanted to focus on character design and animation to lead the story, so I experimented with modeling not only with Maya but also with Z-brush and

improved my animation by exploring and referencing other animated films. I set up the concept of the future environment in a simple and stylized design with bright warm colors. In addition, I focused on the characters' physical motions and emotional expressions. I did not consider using voice actors because the main method to lead the story would be through the action and facial expressions of the characters. However, I focused on sound effects and background music to help the audience better to understand the story.

1.3. Proposal

The proposal for completing the final animation story was challenging for me. For one quarter, I collected as many ideas as I could and began to write the story. I handed in my first proposal in April 2008. However, the proposal wasn't approved for several reasons. For example, the personalities of the characters were not clear to committee members, and the story didn't give sufficient reason as to why the characters would act as the script described.

Therefore, I revised my story to develop the personalities of the characters more, and I submitted my second proposal in May 2008. Even though my proposal was approved, there was still an issue that some events in my story needed to be corrected so that it would look more reasonable and fun.

During the summer of 2008, I changed and added some events in my story with my advisor, and then, I was able to get my final story and finish my pre-production process.

2. Process

2.1. Character Design

Figure 2.1 Peter (older

Figure 2.2 Sam (younger

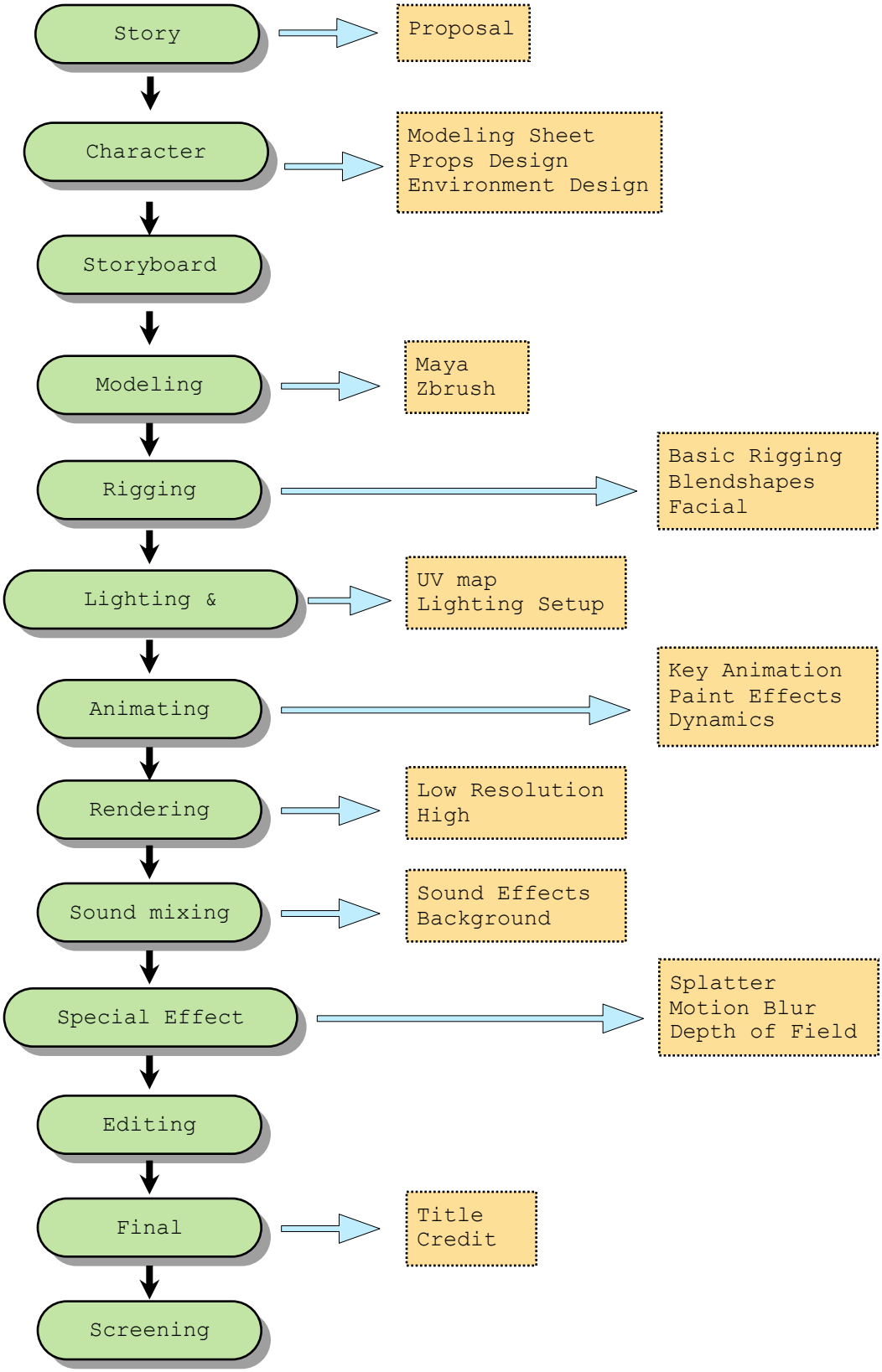
The main characters, props, and background design were drawn for the next process. Two brothers are the main characters in the story. The older brother, who was a bit cold at first, but later took care of his younger brother was designed to look sensitive(Figure 2.1). The younger brother, who acted bravely was designed to look cute to fit this personality (Figure 2.2). The character that has the magic ball that the older brother envied was designed to have a sharp and high-strung appearance. Other extra characters were designed to be ordinary to prevent distractions from the main characters. The handy ball which had an important role in the story and several props (skateboard, headset phone, squirt gun, and robot) were designed to be associated with each other. (Figure 2.3) For the representation of the future type of background, I researched the web to get the reference images, and then, I designed the city to be isolated by the ocean

(Figure 2.4). Also, I added trees and benches that we could see in the present in order to look more believable. In the case of the pie delivery ship, I designed it to be simple and to show the purpose and role of the ship as well.

Figure 2.3 Prop Design

Figure 2.4 Environment

2.2. Workflow(Pipeline)



2.3. Storyboard

After setting the story, I began to create the storyboard. Key-shots were drawn in post-it notes. It is a very convenient method and I can make changes whenever I need to. A storyboard is the first step in which the words written are represented visually, and it is used to be the Bible for characters, setting, background, camera angles, and the cut. Therefore, the well created storyboard reduces the production time and mistakes, and is one of the most important steps in the whole production process. In addition, the animatic storyboard in which the drawings are in post-its puts the timing in a row and easily gives an idea of how the feel of this film would be and what this film is about.

2.4. Modeling & Rigging

I made the modeling in Maya and Z-brush software according to the character design. In order to avoid the problem of the characters being so complicated that animating and rendering were too slow to manipulate, I tried to create low poly objects as much as possible. In the case of making props, I made two types of objects which had a low poly and a high poly object. Then, I used the necessary objects depending on the scene to reduce the total number of polygons.

I planned that there was to be no dialogue in my film, so the only way to convey the story was through motional and facial expression, thus rigging for the character was created to use the features I need the most. I focused on making the facial expressions by using Blendshapes and Expression in Maya.

After rigging, working on skin weighting was a very tedious and time consuming process to create the natural movement of characters. Furthermore, it took a very long time to complete skin weightings for the final characters because I had to modify the skin weight whenever I found an awkward motion of a character during animation. Also, I needed to do it very carefully because if I did re-skin, I would lose my whole animation of that character in the scene.

2.5. Setting up Environment

To set up future types of environments, I made the isolated city by the sea, and I created animated trees and grass using paint effects in Maya for a more realistic representation. But, it had to endure the increase in rendering time dramatically. To solve the problem that the number of polys were too high, I separated the background layer into three layers. Then, I could control the view that would be shown depending on the scene. In addition, I made a reference file for the characters, props, and background, so I could avoid the issue of the scene file getting bigger. In other words, I made every scene file that contains needed reference files, and it had more advantages in the file managing and editing processes.

2.6. Animation

At first, by setting the key frame animation I started to animate the characters and check the timing at the same time. And then, I edited the detail of animation in Graph Editor. In the case of walk cycle and repeated action, I

created reference files which had its own animation of the characters independently. After making the animation in Maya, I checked how it looked in Playblast in which I could get the feedback quickly in Maya, and modified the unnatural gestures to improve animation. As mentioned before, I kept woods and grass animated automatically by using paint effect during the characters and props animation. However, paint effects could not be rendered in Mentalray Renderer, so the objects which were made by paint effects had to be converted to poly objects. After several mistakes in the process, I finally rendered the trees in Mentalray renderer. In addition, I could represent the smoke using particle effects in Maya. In the pie fighting scene, I could show a pie falling on the ground by using the soft / rigid body in dynamics.

2.7. Lighting & Texturing

I set up the lighting based on the 3 point lighting because the background in my film was outdoors during day time. Then, I added the additional fill lights where needed. I also set up the lights for each individual character to help the character look brighter than the background.

Each character had his own UV maps for his head, body, hands, and feet, and texture file created in Photoshop connected to the individual UV map.

2.8. Rendering

Due to a broad background, lots of numbers of polygon in characters, paint effects, animation, and dynamics, rendering time was much longer than I expected. Furthermore, I needed to render all scenes with high resolution

quality in the end, and it was taking longer to achieve rendering time. So, in order to solve this problem, firstly, I rendered all scenes with low resolution quality to test not only my animation but also all effects. Secondly, I separated all scenes into 3 layers such as a long distance layer, a middle distance layer, and a close distance layer, for it would be much easier to correct animation and reduce the rendering time because most of the animation was done in the close distance layer. If I needed to fix the animation, I could get the result by rendering the close distance layer only. In addition, another big advantage of this separation of layers was that it was easy to express the depth of field and motion-blur which are very important effects in animation. Even though the file management became complicated because of dividing the layers, I could reduce rendering time dramatically and keep my animation adjusting whenever I wanted to correct.

I considered the screen size for rendering very carefully. I usually rendered my film with 640*480. However, I wanted to show a wide environment in this film. Therefore, I made a decision to render with 780 by 480 for a wide screen.

2.9. Sound & Music

I was worried about the music from the beginning, for I had very limited experience and sources of music. Fortunately, I listened to some advice from a friend, who was working in the music industry. So, through research and reference, I made up my mind that I would try to make and choose background music and sound effects of my own. The first time, I inserted

background music at the beginning, ending, and the parts where I thought it needed to have music. However, I was sure that loop music could help the audience understand the mood of the story, so I changed my mind and put background music in the whole film by controlling the dynamics. I found some pieces of appropriate music in Apple loops and the Jim pack series for music and sound effects. However, it was pointed out that already made music might be interfering with the attention for the story. So, I made and edited the music by using loop for instruments in music sources with Soundtrack and Garageband software in Mac. In case of sounds effects, I could find appropriate sounds in Apple loops, the Jim pack series, and sound effects CD in the cage of school. I edited the sound effects to fit in with the animation. Throughout this experience, I realized how important sounds were in animation, and I am sure that these specific experiences will help me to make better productions in the future.

2.10. Editing

I rendered 3 layers in every scene as I mentioned before. Then, I exported all rendered frames to After Effects and made them into a Quicktime movie. At this time, I created the effect for depth of field by adjusting the Gaussian-blur and brightness and sharpness. I overwrote the frames which were rendered again for the motion blur in the necessary parts. The lighting condition was a little different depending on the scene, and brightness of the scene after rendering was also different between scenes, so it took a very long time to match the lighting in every scene.

Through my meeting with committee members, I changed a lot of things and cut and added frames in order to modify the story and make it more dynamic and deployable. I adopted the rendering of the H.264 compression. I used Premiere software for sound mixing, and needed to modify the timing here again.

2.11. Challenging issues

The longer the run time of the film, the more important file management becomes. In my case, the types of rendering files were several and the frames needed to be modified continually, so the importance of file management was increased. For instance, once, several scene files were crashed during rendering, so I needed to spend a few days repairing the crashed files. I organized all files by type and backed up the previous files chronologically, thus, I prevented this issue from turning into a serious problem. Also, file management was important not only in Maya but also in other software such as After Effects and Premiere. It helped me to save time and keep moving forward in the production process.

Another big challenge was the pie splatter. The first time, the pie hitting the character seemed like an empty rounded object without any effect. Then, my advisor suggested me to create the pie splatter when it hit the character. I tried to make this effect in Maya, but the result wasn't good. Then, I tried to present this effect in After Effect. Although the result wasn't satisfied as much as I expected, I thought it would be better if I combined the two tries.

Therefore, I made the pie residue in Maya and added the particle effect for the splatter in After Effects. The result didn't look perfect, but it was enough to give an idea of what's going on.

The final issue that I want to mention is that of the mismatching animation of trees between two different scenes. I made the animation of the trees and grass with paint effect, and these objects have pros and cons. The advantage of this function is that I didn't need to take care of animation for these objects because they moved in random. However, the disadvantage was that it was hard to control animation for these trees. To solve this problem, I rendered the layer again which involved the trees after I shifted all animation from the beginning to the frame number which was the end in the previous scene.

3. Conclusion

Through this thesis project, I spent a significant year that I did creative experience of works that I couldn't have in the previous works and made my efforts to solve the problems in the procedure. Additionally, three members of the professional committee members helped me to attain better quality in my work.

Despite difficult circumstances surrounding me, the full support of my family, my advisor, and committee members enabled me to finish my thesis work and I really want to say thank you to them with all of my heart.

After I submitted thesis film for screening, the memories of the last three years passed through my mind quickly. There were not only lots of worthy

thoughts but also some regrets. The screening program started on Monday evening (May 18, 2009) and I couldn't forget how uneasy I felt and the tension until my film was screened. When I saw the audience who expressed their response, I said to myself that "I will create a better work the next time." Finally, the film was done and Skip who was my respondent spoke about my thesis film in front of the audience with me. After listening to the comments and questions, I said thank you to my advisor, Howard, and committee members, Tom and Ferris. While I stepped back to my seat, I realized that "I'm done!"

APPENDIX A

Proposal

Treatment

Working Title	: Hey, Brother	**Start Date**	: Sep/08
Producer	: Hyungho Shin	**End Date**	: May/09
Advisor	: Howard Lester	**Run Time**	: 5:00 min
Budget	: $2,849	**Format**	:3D Animation HD

Story

Peter, who likes having cool stuff, doesn't like to play with his younger brother Sam. On the other hand, Sam likes not only to play with Peter but also to get along with him. Through Sam's sincere attempts to love Peter, Peter learns to accept Sam and the relationship between them is restored.

Synopsis

The year is 2030. As an establishing shot, we see the wide-angle view of the school just when a school bell rings the end of classes. The camera zooms to the schoolyard. In the schoolyard, Peter is coming out with his future type of skateboard without wheels. When Peter sees the big sharp shaped student who has a new upgraded handy-ball on the other side, he stops to see it and wants to get that kind of the new one. He pushes the button on the middle of his skateboard and then it is transformed into the small rounded ball called a handy-ball. He pushes another button and the light is on and there is an imaging message from the school above the ball. The message is that his academic record for this term was pretty bad. As he is sitting on a rock with bad feelings, he gets a call from his mom. When he puts his handy-ball on his ear, it is transformed into a headset. His face is getting dark due to her scolding.

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After hanging up his call, he hears Sam's voice call "brother." Peter doesn't turn his head to Sam who is running to him with joy. Sam is showing Peter that he got a good grade through his handy-ball. Peter didn't give any response, and then Sam notices that Peter's feeling is very low. Therefore, Sam thinks what can help his brother's mood. He pushes the button on his handy-ball. Then, it is turned to the toy-gun and Sam shows Peter what he made. But, Peter didn't give any interesting in it. Then, Sam tries to think another idea. He pushes another button and it is turned to basketball. Peter who is getting angry to Sam pushes Sam's hand which holds the handy ball purposely, and then Sam drops the basketball on the ground. When Sam picks it up from the ground, Peter kicks Sam's hip with his foot. Peter roars with laughter as Sam rolls around on the ground.

After looking around, Peter thinks for a while, and he looks at some direction. Then, he pushes the button on his handy-ball. Sooner, he hears some flying sound from the sky and looks up to the sky. A pie delivery airship is coming. Sam begs Peter to buy a pie. So, he orders two pies and gives Sam one. Then, Peter walks to the guy who has a new upgraded handy-ball. Then, he starts to talk to the guy about the new handy-ball. Also Peter suggests the guy to have a pie in reward for showing the handy-ball. However, the guy not only refuses his asking but also pushes Peter's hand holding the pie. So, the pie is fallen down on the ground and Peter walks back to the Sam with disappointing.

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Seeing this situation, Sam gets very angry. So, he throws his pie that Peter gave him. It flies to the guy who did disrespectful to Peter. The pie hits guy's head. While Peter is embarrassed, Sam is glad what he did. The guy gets angry at them and pushes the button on his handy-ball. Then, He looks up to the sky to see the pie delivery airship. He orders two pies. When he gets them from the ship, he aims a pie to them and throws one. However, it misses Peter. The guy is ready to throw the other to them again, and throw it again. At this time, Sam escapes the pie easily, and then it flies and hit an innocent person who stands beside Peter and Sam. The guy who is hit turns around and then orders a pie to the sky ship. Then, he throws it back. It hits another guy who is in people. Then, pie fighting gets bigger to the fray. A lot of pies are supplied by several delivery airships and more people join this commotion. There is someone who throws pies with a stack. Another uses slingshot. There are people who use the gadget or instrument to throw the pie. There is someone who eats some pie during the fight. The number of delivery airship is increased and the fighting grows bigger.

Peter crawls out from bottom of cloud and stand up to see back what is going on. Then, he goes back to the cloud to get out of Sam from the commotion. After coming out from the cloud, two brothers see each other and smile. Then, Sam shows Peter an intact pie on his hand. Peter rubs Sam's head and they do high five. They walk away together in triumph arms around each other shoulders, sharing the one remaining intact pie.

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Approach

My film will be made of 3D computer animation. I will use Maya, Photoshop, After Effects, Soundtrack, and Final Cut Pro as the primary software. I want to focus on character design and animation to lead the story, so I will experiment with modeling with Z-brush or Silo and improve my animation by exploring and referencing other animations.

My plans for futuristic background of animation include using a simple and stylized design with warm colors in order to focus on the characters' physical and emotional expression.

I will look for someone who can help produce my soundtrack. Even though I also need to look for voice actors, it won't be a big deal because most of my characters' voices aren't dialogue. However, I will consider the composer very carefully.

Timeline

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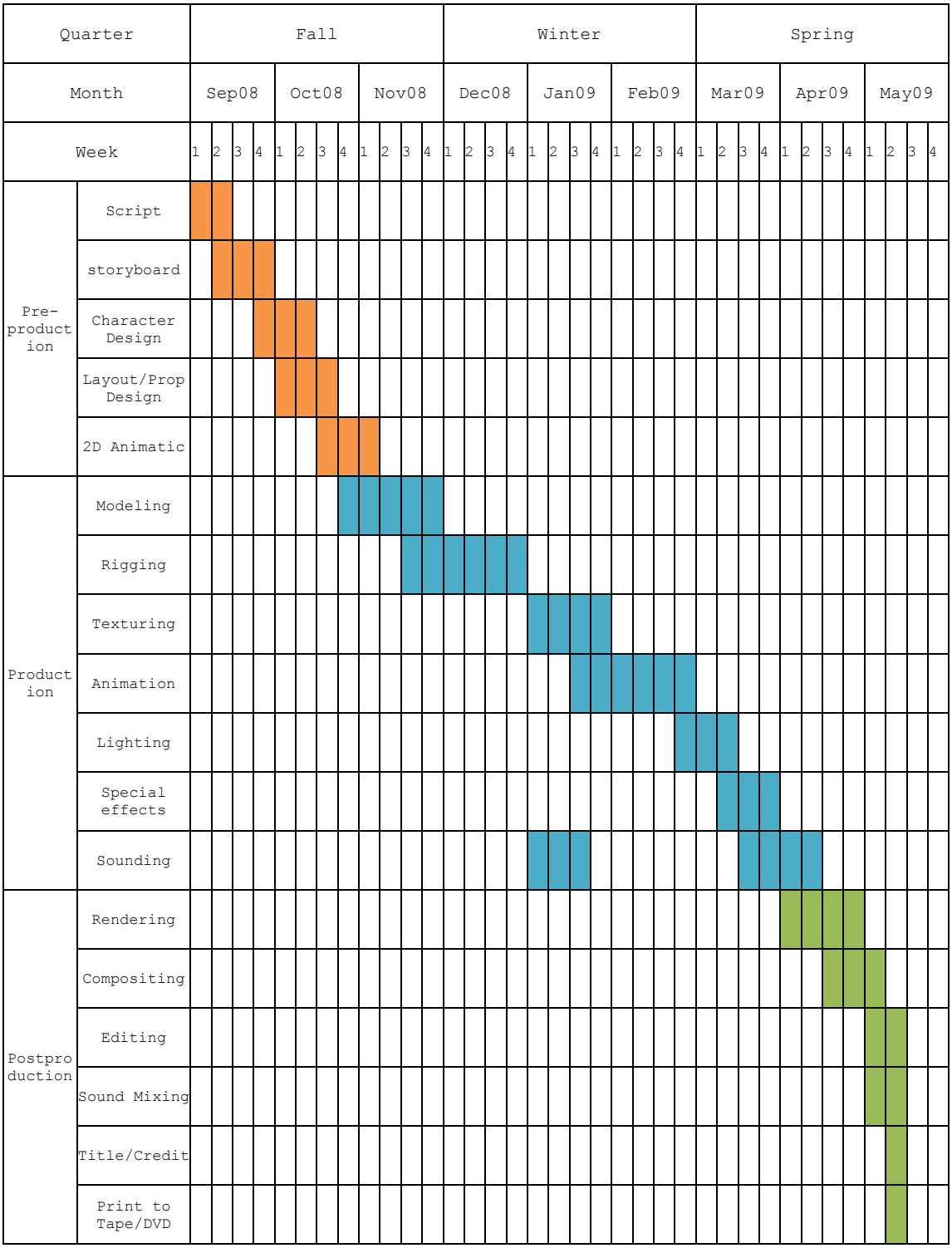

Budget Summary

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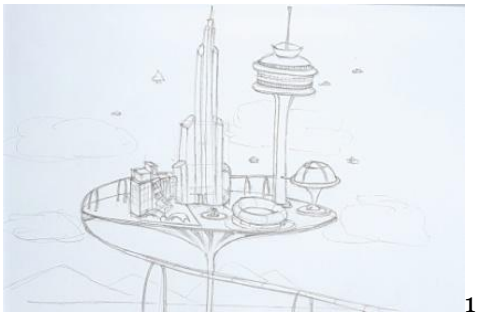
Description			Qty	Cost	Total
Pre-Production	Script				In-kind
	Reference Material	DVD	2	$50	$100
		Textbook	2	$70	$140
	Design				In-kind
	Storyboard	Paper/Stationery		$50	$50
	Sound	Voice	2	$100	$200
Production	Computer Hardware	500GB Hard Drive	1	$250	$250
		RAM(2GB)	2	$75	$150
	Computer Software	Z-brush		$300	$300
	Modeling/Rigging				In-kind
	Texturing/Lighting				In-kind
	Animation/Compositing				In-kind
	Editing				In-kind
	Tutorials(DVD, book)	Modeling	2	$70	$140
		Rigging	2	$70	$140
		Animation	2	$70	$140
		Editing	2	$70	$140
Post-Production	Music	Composer		$300	$300
	Media	DVD	25		$20
		DV tape	2	$10	$20
Festival Registration Fee			10	$50	$500
10% Contingency					$259
Total					$2849

APPENDIX B

Storyboard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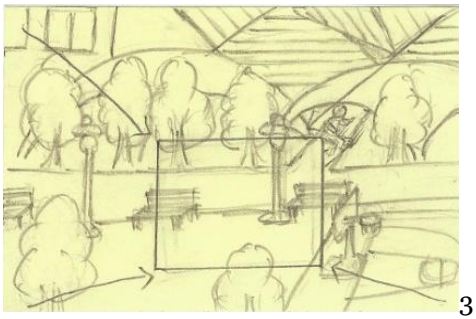
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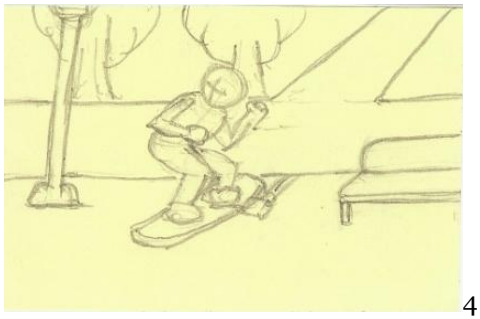
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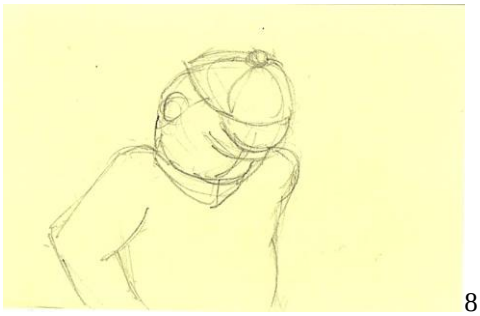
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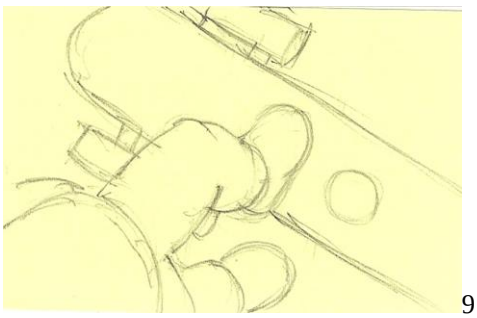
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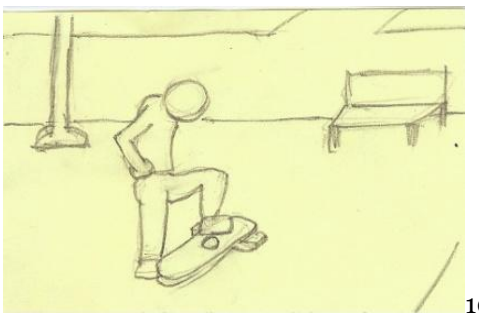
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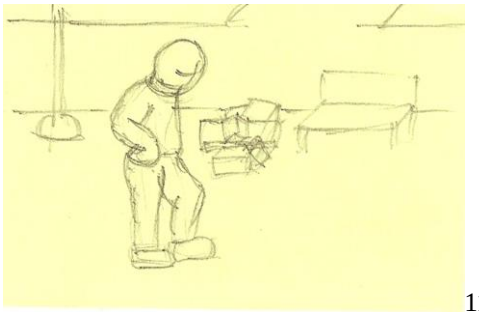

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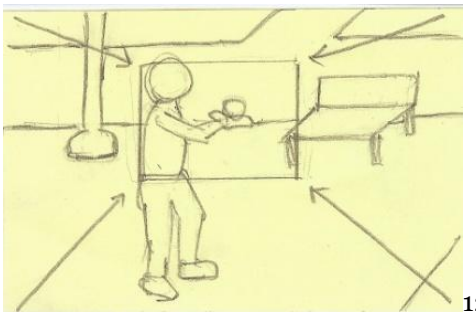

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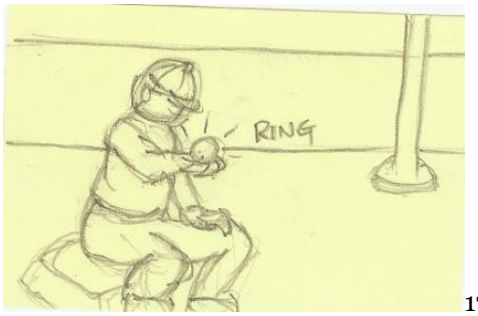

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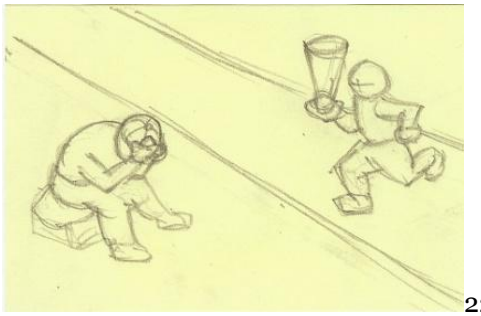
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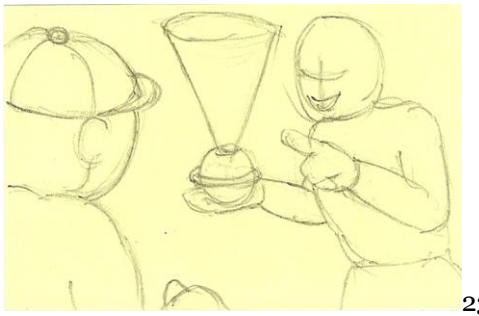
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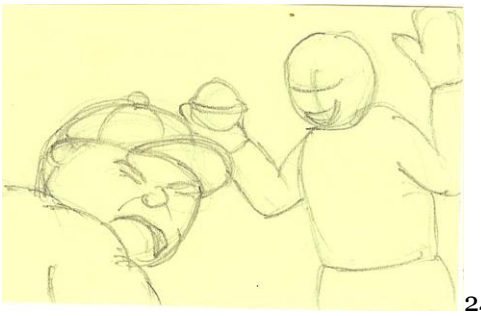
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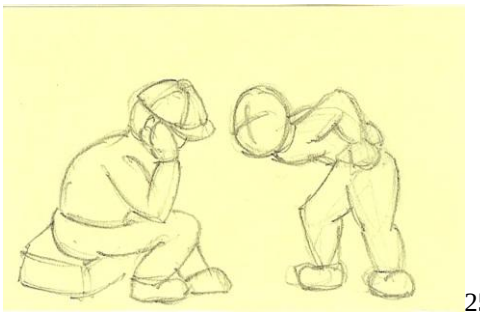
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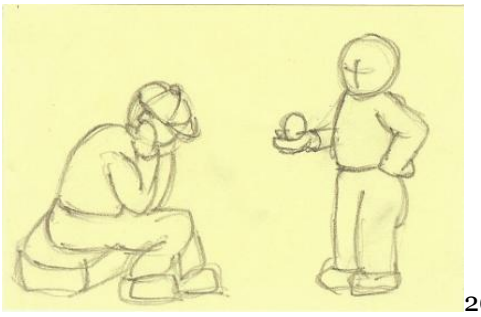
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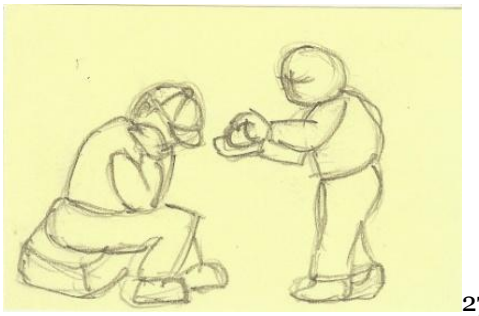
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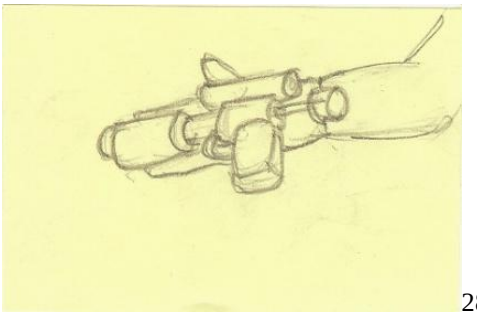
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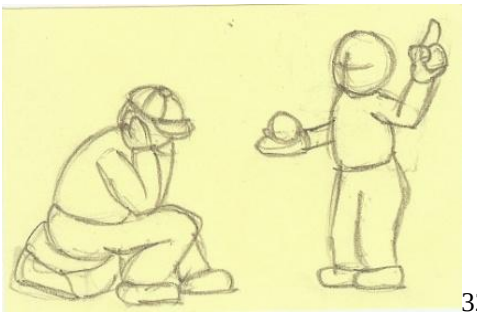
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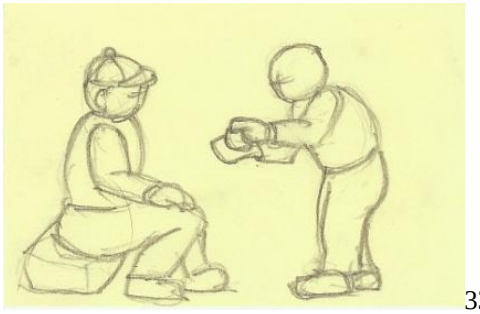
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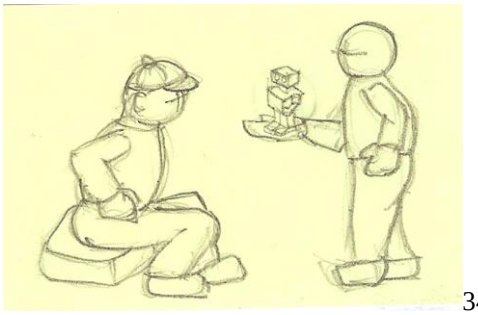
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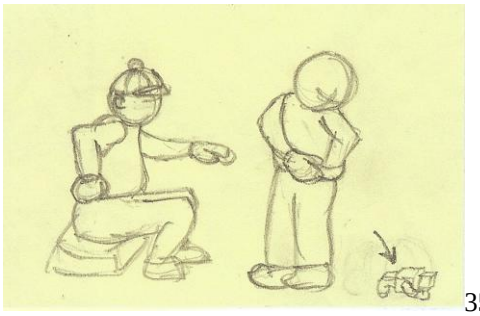
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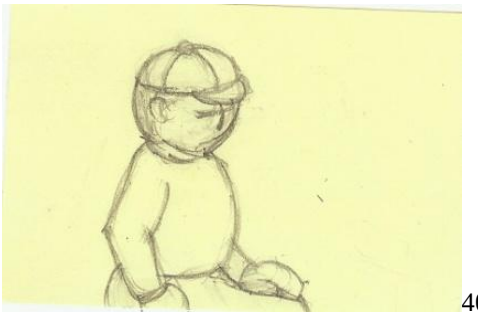
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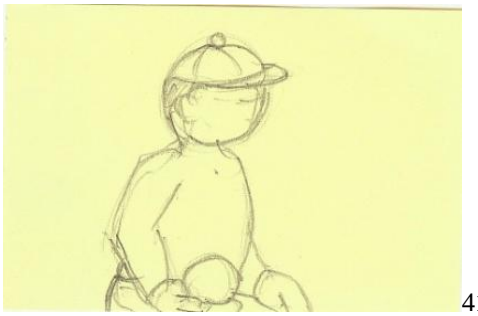
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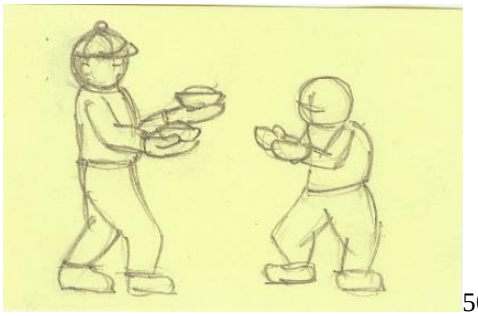
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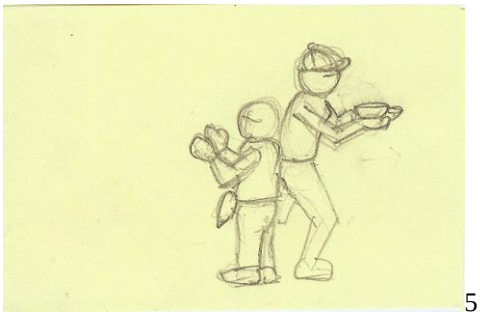
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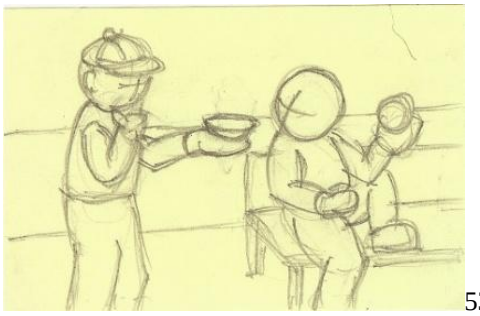
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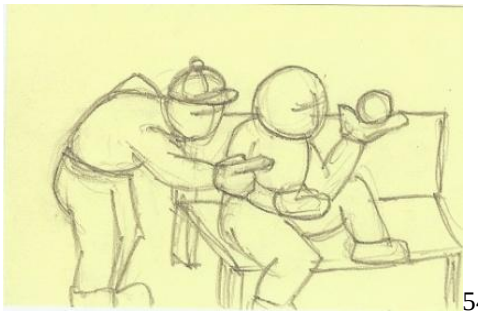
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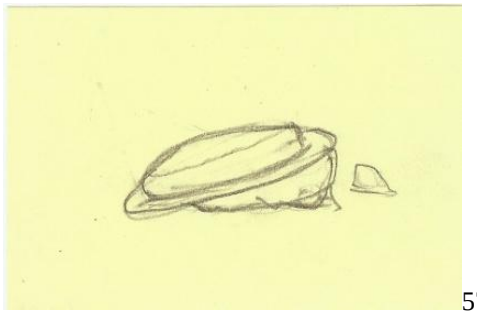
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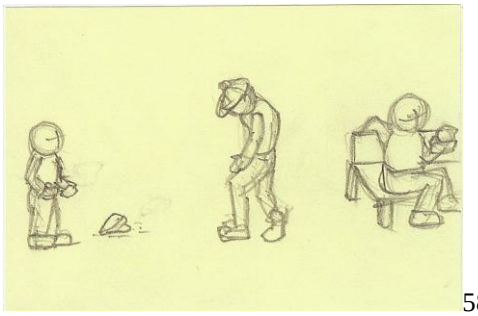
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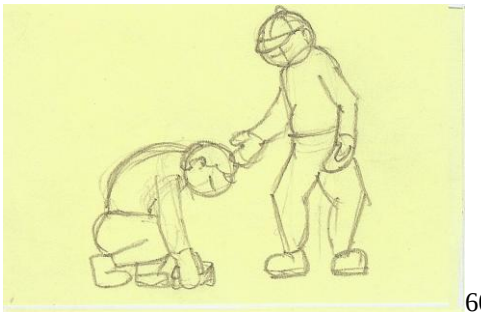
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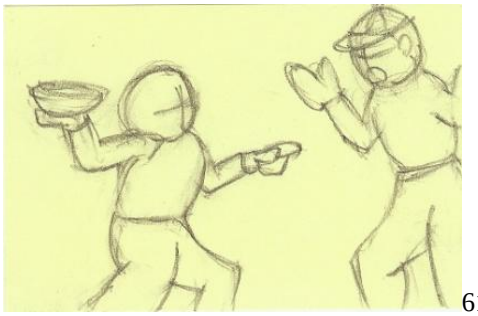
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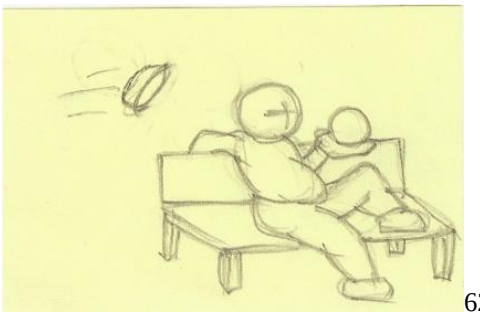
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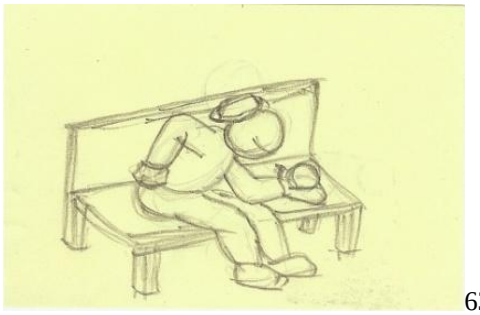
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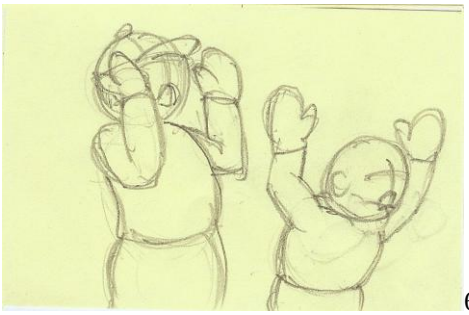
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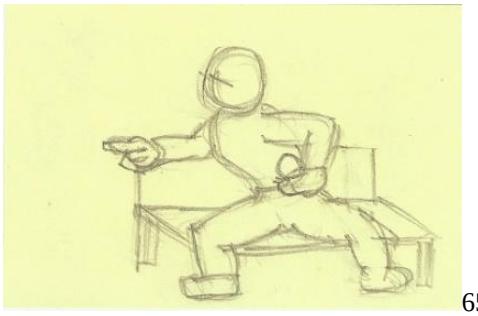
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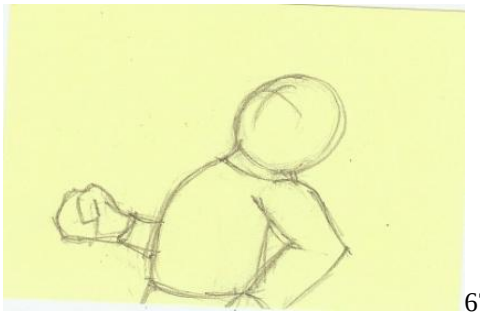
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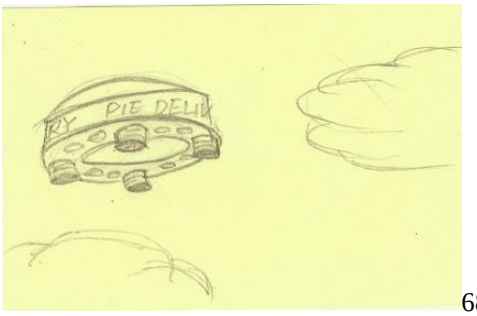

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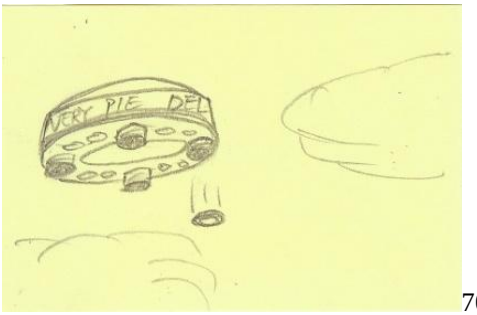

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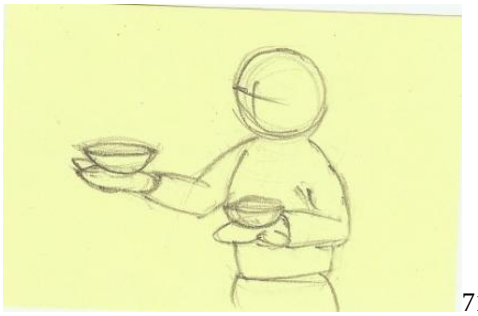
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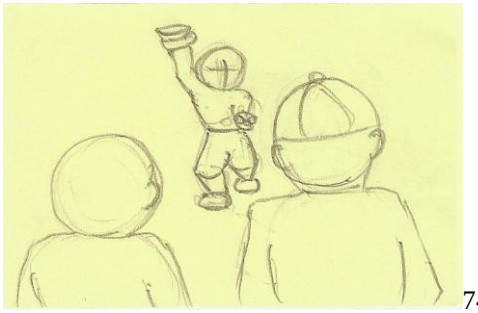
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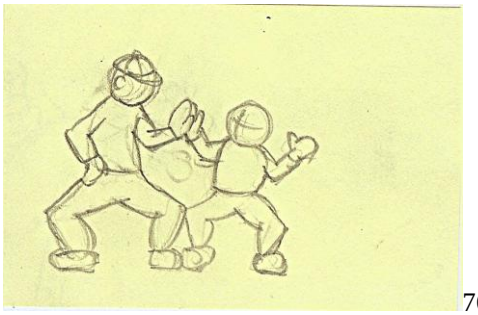
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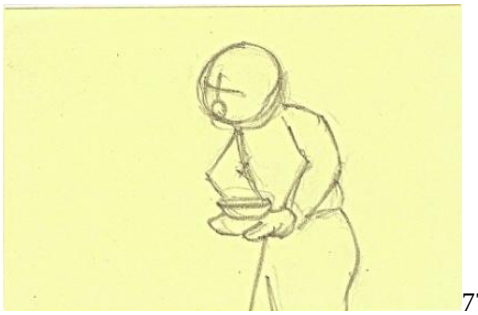
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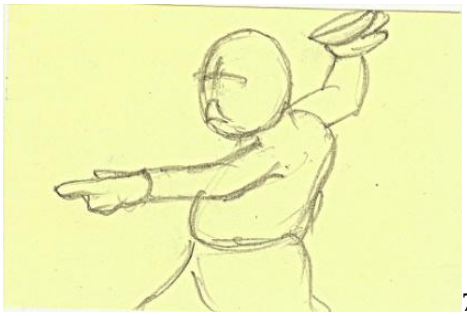
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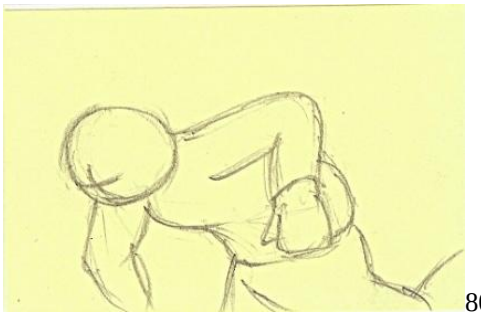
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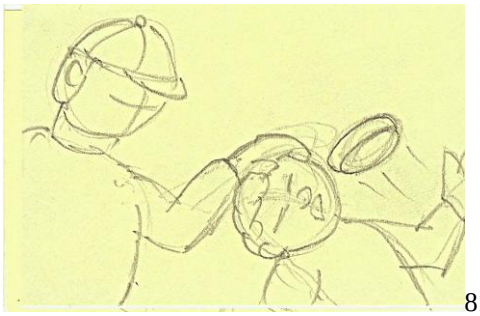
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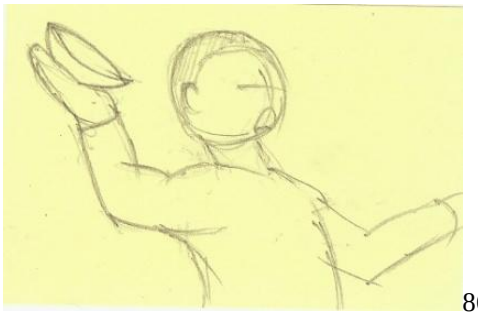
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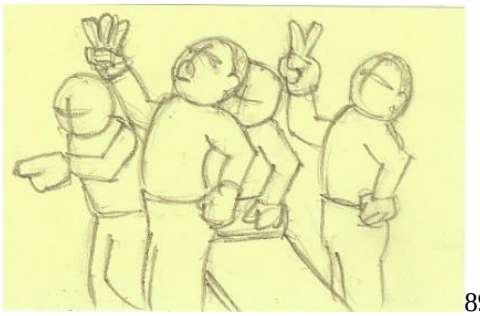
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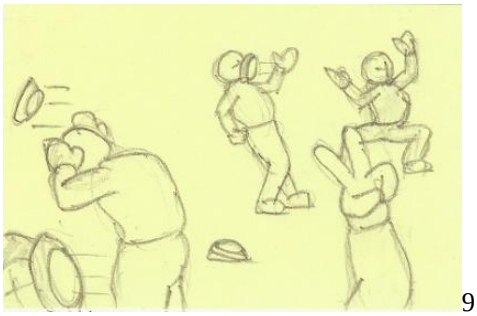
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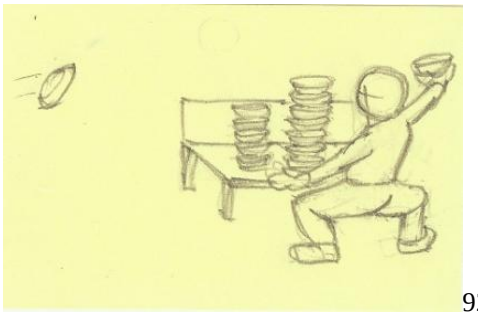
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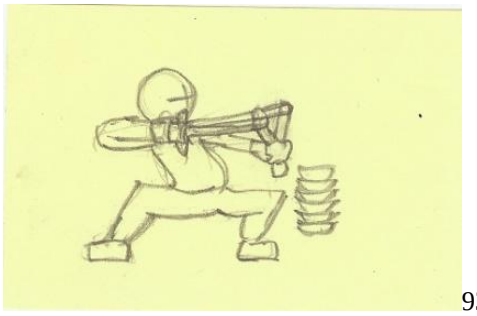
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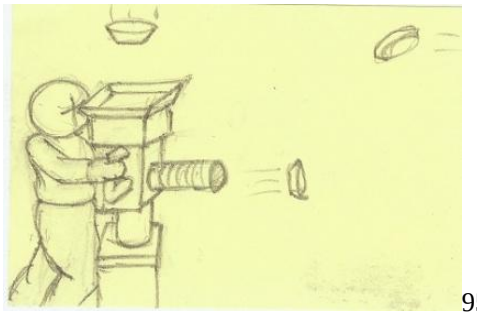
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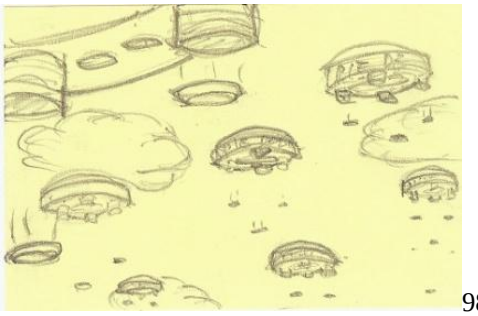
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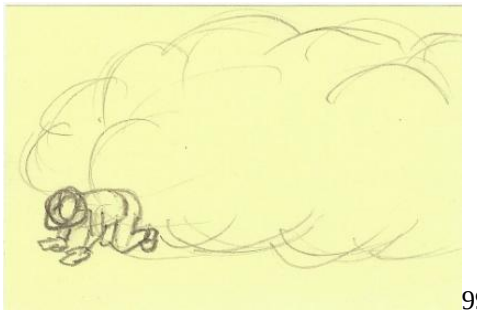
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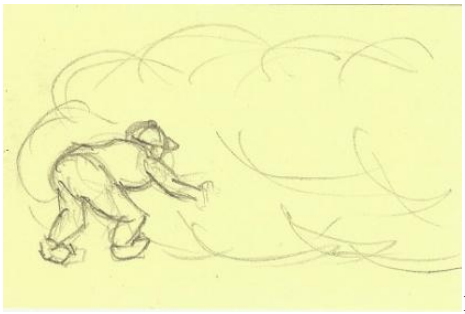
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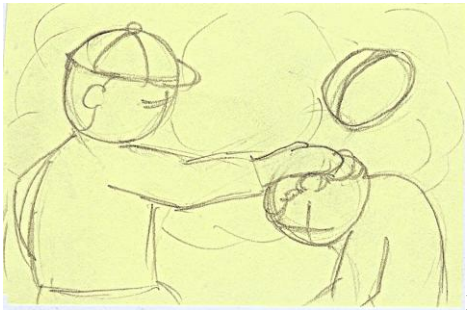
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APPENDIX C

Color stills

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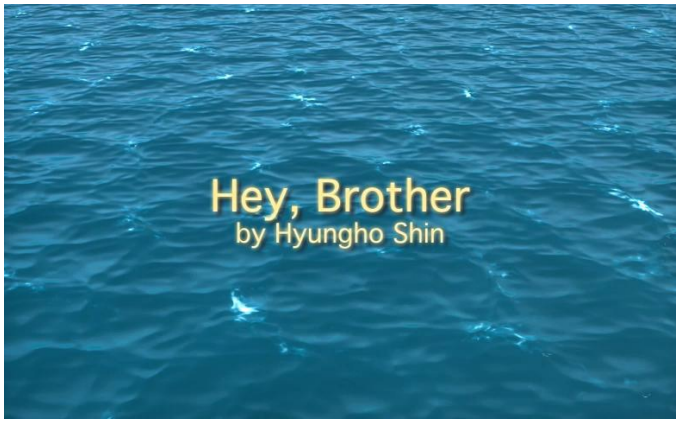

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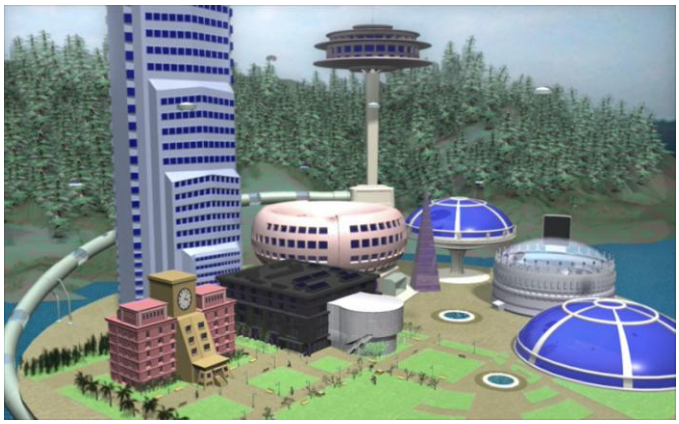

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