Eucalyptus

Jiny He

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Abstract

Young boy Joey and his teddy bear; a witch with a nasty cold and a baby koala to hold; a magical cough drop and a mystical forest; “Eucalyptus” is a thesis film created with the intention to illuminate the powerful ingenuity of children’s imagination. With the intended audience of children between ages 3 to 8 years old, “Eucalyptus” follows the journey of a boy named Joey, and his sidekick, Teddy, as they battle the wicked witch in order to save the native Eucalyptus Forest dwellers—the koalas. The film is an animated fable created in the realm of 3D Computer Graphics, using with the software, Maya. The following thesis report explores the conception and realization of this project, both aesthetically and technically.
Acknowledgement

Many many thanks to many many people who have helped me throughout my three years of studies at RIT, especially during my final year of thesis production. However difficult these times have been, I have enjoyed myself nonetheless through these painstaking learning processes. I would like to thank all of my professors, especially my advisor Skip Battaglia and my committee members Tom Gasek and Mark Reisch for advising me over and over again throughout each stage of the project, both technically and aesthetically. I would also like to thank my professors Ferris Webby and Alan Rhodes for helping me to initiate this project during my second year at school.

Lastly I would like to thank my family and friends for all the supports I’ve been given throughout my studies. Thanks to my friends for all the encouragements at times of frustration and the valuable critiques to help me better my project. Thanks to my supervisor at The RIT Leadership Institute & Community Service Center; Phyllis Walker, who have sent me home for showers and sleep numerous times when I showed up to work after pulling all-nighters. This project would have never become feasible and I would not be in the place where I am today without the help and support of everyone. This project is partly done for you, all people who have influenced my life greatly.
Pre-Production

Development: The Culmination of Story and Style

Children have vivid imaginations without limits and boundaries; and conveying these ideas in an animated short is something I have always been keen on and interested in. Thinking back into childhood and the imaginative journeys my friends and I had, I wanted to make an animated short that would take the audiences to on a vicarious journey lead by the main character, through a magical setting into a fantastical adventure. With these concepts in mind, I began reflecting on my favorite childhood make-up adventures and realized they generally evolved around nature. Some of the most memorable experiences included exploring the wilderness of backyard suburbia Australia with my friends and my then pet cat, Sanda. We would follow him into the unknown bushes of the backyard that separated our house with the neighbors’, leading ourselves into wild expeditions of fantastic fauna and flora exploration. At the same time, we have always dreamed about discovering injured or hurt bush babies—joey’s of koalas, kangaroos and other marsupials, and bringing them home to take care of them, as it is not uncommon for Australians to find these sometimes neglected young ones on the side of the road. Realizing that these experiences are unique and indigenous only to Australian children, I decided to incorporate this into my film. Showcasing these wild imaginations to the rest of the world. My audiences will be able to gain an insight into what it like to be a child growing up in Australia. I wanted the film to be almost similar to reality except flavored with large doses of childhood imagination.

The original thought for the story is to have it being told through the format of a children’s book. It will begin with Joey—the main character, on the bus home, reading from his own storybook about his adventures with his teddy bear. The title of his book will be called “Joey and Teddy’s Big Adventures” and the same title will be reflected for the film. *(please see Appendix I Thesis Proposal for original story script and concept) The story will transition from his book into real life adventure. This will engage the
audience into thinking and participating as they wonder which world is the world that Joey lives in and which world is the one he had created. Even though there will be a sense of reality versus imagination, because it is designed for children, I wanted to keep the story simple. The best method, in this case, is through the differentiation of aesthetic medium. The book Joey reads from will be reflected in a simple 2D flash animated style while the world Joey lives in will be 3D. The 2D animation will then weld into the 3D world creating a mystical illusion of dreaming versus reality, ending with Joey and Teddy in bed furthering this dream-like notion.

After deciding that the emphasis of my film will be a story told to children through a child’s perspective, it was time to find an aesthetic medium that will also project this idea across; all the while relating and appealing to my targeted audiences. With the help from some research books on children’s literature, I have decided to set a few ground rules for the film. To reflect the vivid imagination of children, the setting of the film will be in a lavishly wild forest with extraordinary forest features. To contrast with the strong visual image, the characters of the story will be kept simple with minimum motives. Their goals will be straightforward and likewise their thoughts and actions. It will not be a film about complex character exploration; rather, it would be an eye pleasing film featuring strange yet vibrant design of stylized sets, props, and character. Character and set design will be the main focus of this production aesthetically, as it is a field that I am highly interested in. I have determined before the initiation of the project that the most production time will be dedicated to working on the characters and making them as appealing design wise as they are in the story. After all the decisions are made, it was time to bring the pencil to be paper and thus begins the process of 2D design.
Designing Characters and Sets: The Realization of the “Eucalyptus” World

Characters:

Joey
Joey is the main character of “Eucalyptus”. He is the hero who saves the day and the one who leads the audience through the journey. Having the protagonist being a boy rather than a girl was purely decided on the fact of personal preference. Since my previous animated short was centered on a girl character, this time I wanted to design a boy character to whom most children can relate to. Joey will have the typical appeal of a hero character with large eyes and rounded face. There will be asymmetry in his hair to create personality. He will be wearing a school uniform similar to what the school children of his age in Australia wore, with high rugby style socks to show he is active and enjoys sports. After pinning down the design of Joey, I went into Photoshop and tested various color styles for him. From black hair to blonde to brunette, from green eyes to black to blue eyes, and different colored shirts. Finally after many days of hue shifts and coloring poses, Joey is finalized as a green-eyed brunette with blue stripped t-shirt and grey school shorts. To finish the relatable, amiable, but still stylized look, he is touched up with a button nose, slender limbs and accessorized with a large backpack.

Teddy
Teddy is Joey’s teddy bear sidekick in the story. He is also the hero who saves Joey from the evil witch. The design of Teddy did not have to follow any specificity model and I finalized his look after a few sketches, basing him off of a teddy bear I owned. I know I wanted the texture of Teddy to be a very coarse cloth texture instead of fur and tested a couple of colors variations from black to brown.

Witch Pauline
Witch Pauline is the most eccentric character of the film. I had a lot of fun designing her, as she is very strange yet silly character. There were no written rules on how a witch should look like, as opposed to a boy who needed to resemble some correct human
anatomy, so I designed her to be as outlandish looking as possible. Witch Pauline’s
designs are highly influenced by Chuck Jones’s Witch Hazel in her personality, and also
the design of the Mayor from Cloudy with a Chance of Meatballs. The Witch is conjured
by Joey’s imagination therefore I wanted to keep her form simple—with primary shapes
such as a triangle for her hat, a jellybean for her body, and messy hay like hair with one
lock of curls. She would have a big nose that could easily catch a cold, which is an
essential element to the narrative. Because most witch designs have a hooked nose that
turns downwards, I decided to give my witch an upward turned nose to add a touch of
snootiness in her personality. She is a simple character with one motive, doing whatever
she can to cure her cold. She will be conveyed as silly and nonsensical according to
Joey’s imagination.

**Koalas**

The koalas, similar to Teddy, are more basic and secondary characters. Because of the
limitation of time and resources, I made one model of Koala and used that as duplicates
for the rest with color shifts and size differences to differentiate. There is to be one main
baby koala who is the injured one and seeks help from Joey and Teddy and the rest will
be secondary characters being bullied by the Witch. Because good fur is very hard to
achieve in 3D and will take up a lot more render time, I decided for the koalas to just
have simple skin with a bump map to depict the fur texture.

**Sets:**

**Joey’s Home**

To keep the project simple, only parts of Joey’s house will be made in 3D. The house is a
standard modern design with a fence and a backyard that connects to the forest by a
stone-wall. The look is much more manicured than the forest. The shape of the house is
square and formal, which creates a great contrast to the more organic and lose style of the
main eucalyptus forest.
**Eucalyptus Forest**

Compared to the house, the Eucalyptus Forest is the manifest of Joey’s imagination. It has a vibrant and wild look. Drawing influences from Dr. Seuss, I want to create a mystical set filled with fantastical vegetation and vivid colors. Fused with strange floras and an amber toned earth, the Eucalyptus Forest resembles the lush and unique bush environments of Southern Australian woodlands.

While the designs are being finalized, I moved on in the production to being the process of an animatic. First thumbnail sketches were made according to the script, then to storyboarding, and finally the animatic.

**Storyboarding and 2D Animatic: The Blueprint of Narration**

Storyboard is a crucial component of pre-production as it is the visualization of story. Boarding out panels helps to break the story into sequences and shots, fused with camera angles and staging, it can then be strung together as an animatic bringing the whole story to life through simple rough drawings. To stay on schedule, I started boarding out storyboards before the design of characters and sets were finalized. The thumbnail sketches made it easy to get a sense of overall story and camera angles. Then, I made more detailed drawings of scenes and sequences followed by stringing these panels together in After Effects to gather a final sense of timing and fluidity with an animatic. Through looking over my boards and animatic, I began to realize some problems with my story. It was brought up by my advisors that the characters’ motives were too simple and the defeat of Witch Pauline at the end lacked solidification. On top of it all the final 2D animatic seemed too long and ambitious for a one-year, one-person project. With those limitations and changes in mind, I decided to truncate my story, getting rid of the 2D animation section all together, in order to better utilize time and resources.

The storyboards and animatic also helped me figure out exactly what set, and what part of a set needed to be designed and built in Maya based on camera angles. The staging of characters through the board panels and the animatic helped to eliminate unnecessary designs making it much more economical.
Production

Modeling: The Sculpturing Process
I began modeling my characters towards the end of my storyboarding and 2D animatic stage. I really wanted to make a 3D animatic through Maya to pin down exactly how the whole film would play out, thus the process of modeling began well ahead of the finalization of my animatic. All of my models from characters to props to sets are made in Maya. I began with the characters and props and decided to make mock ups of the set to help with the animatic. The final set is modeled after the 3D pose-to-pose animatic is finalized. To save time on modeling, the head mesh for Teddy and the Koalas were based off the same primary shape. I completed the character models by the end of first quarter and scheduled time to complete the UVs during the holidays in order to begin the rigging stage starting second quarter. After finalizing my models in Maya, I brought them into Zbrush for a little touch up- sculpting the hair a bit more and just adding a few extra details to make the characters more appealing.

UVs
UVs is an essential stage in production as the correct UVs guarantees the textures and colors of each model will turn out to be exactly the way I have designed them. It is also very crucial as the following stages of production (rigging, texturing, animating and rendering) will not be able to begin unless the UVs are correct. Once the UV is determined, there is not going back on the modeling. UV is also a very tedious stage of the whole CG process. Luckily, I was introduced to the software headus UV Layout, which made my UVing life much easier. I was able to complete the UVs for all of my characters within two weeks.

Rigging and Blendshapes:
Rigging and Blendshapes are essential to animation. It determines the extreme poses the characters will be able to achieve and adds to the fluidity of the animation process. Because I wanted to explore lip-syncing through this film, making enough and the correct blendshapes is also crucial. Due to time constraints, I was only able to make phonemes
(AH, AE, EE, OO, FF, TH, and S) for the two main characters Joey and the Witch. Teddy and the koalas only had simple blendshapes as their emotions are limited. I used the Setup Machine and Face Machine to help me determine where the joints on the body and face will be placed. Then I painted the weights in Maya to counter out some broken mesh through weight influences. The more human like characters Joey and the Witch had IK and FK switches on their arms and legs to help with different sets of movements. I also made a sculpted a few blendshapes in ZBrush to help with some of the more standard emotions including surprised, scared, happy, and sad.

**Texturing: Adding Colors and Dimensions to the World**

Texturing occurs around roughly the same time as rigging. With the models finalized and the UVs completed, the texturing and rigging stages can be happening simultaneously. I sought many help on texturing as it is not my forte. I had all the color and textures references designed in Photoshop and sought help to realize the final look in 3D with added texturing maps and shaders for extra dimensions.

**Animation: The Visualization of Story**

I found animation to be the most challenging part of the whole production process. The style of acting and the need for correct pacing all work together and influences the way an audience will perceive the film. This is exactly the reason for why I wanted to make a precise 3D animatic. A set animatic will not only help with scene set up and layout, it will also determine the pacing for the whole animation and help me with each movement I will create. After rigging and blendshapes, I have also tested out a couple of walks for the characters and how they body will move. With the 3D animatic consolidated, I was able to divide the whole film in scenes and animated on a per scene basis. Throughout animation, I have learned even more on how crucial rigging is to animation, I have experienced many times problems from broken rigs to un-animatable controls to unachievable poses. All these hardships turned out to be a great learning process giving me the opportunity to better understand the limitations of 3D and the limitless technical ingenious of computer generated animations to counter these limitations.
Casting

Because there is lip sync in my animation, I had to record voices well before animation in order to precisely match the animated character’s mouth movements to the recorded dialog. Choosing the correct cast drew easy and difficult at the same time. It was fairly easy to find the perfect cast for Witch Pauline. I knew I wanted someone who had a unique voice and was able to act freely to the strangeness of this peculiar character and her peculiar environment. I approached fellow classmate Elisabetta D’Amanda with my 3D animatic and gave her a couple of ideas on what I wanted to achieve with the character. She immediately agreed to be the voice of Witch Pauline and added much more life to this eccentric character. She was a great voice actress and understands well what I wanted. It was a bit more of a challenge trying to find the right cast for Joey. Trying to find a good voice actor for a 10-year-old boy turned out to be surprisingly hard. I originally wanted Joey to be able to have an Australian accent furthering the idea of this was a story from an Australian child’s point of view. However, because of the distance and proper recording materials, it seems too ambitious to have one of my friend’s brothers be the cast for Joey. Luckily, after months of search and working out schedules, my friend Diya Ogburu was able to stand in and record some dialogs for me to begin animation on Joey.

Lighting and Rendering

Because it is anticipated that rendering would take a very long time, especially when all the graduating thesis films are going to be made in HD 1080, I have decided to start rendering early to avoid any last minute hiccups. To make better use of Maya’s resources and expedite the lighting process, I decided that stylistically the Physical Sun and Sky light generated by Maya mental ray nodes would work well for the overall atmosphere and lighting of my film. The shader settings from Physical Sun and Sky only need to be adjusted slightly to meet the visual needs for my scenes. With the render farm resource available at school, this alleviated the strains of having to render locally on one computer. The seeds from each online station provided enough rendering power to help me finish outputting my scenes just in time.
Post Production

Special Effects
While some shots are going through rendering, I began stringing the finished shots together in After Effects. Because it is a magical story, I decided to utilize both the 3D particles generated in Maya and also the 2D particle effects in After Effects to help embellish my film. I played with another software called Particle Illusions for some magical dust effects and decided that the After Effects plug-ins were decent enough. Each time Witch Pauline brandished her wand to cast the spell, a trail of particles would be illustrated. At the same time, I utilized a lot of masks and layers to help create the flashing backgrounds, trailing smokes, and evaporating scents for the story. The dissolving cough drop into the beaker was a scripted particle effect achieved in Maya.

Music
Music provided the emotional continuity for my animation. There is limited dialog in the story and the whole narrative plays along to the accompanying music. I hired a compositor from the Eastman School of Music to help compose the scores for my short. Graham Keir did a great job in understanding the mood and needs for my film. The magical and whimsical music added an extra hint of mood to my film.

Compositing and Editing
After all the sequences have been completely rendered and special effects included, I added the music to the story together with sound effects and voice. I then rendered out the whole animation through After Effects in HD format, which proved to be another challenge. The difficulty lied within the conformity of 24fps video file against the 30fps audio files. Fortunately, the final product was successfully rendered right at the deadline.
Summary

Screening
Screening is the most nerve wrecking process of my entire thesis production. It is a celebration of a whole year worth of hard work but it is also a time where your whole year work of hard work gets scrutinized and criticized by a group of strangers who only watch a five minute piece displayed in comparison to the many hours of work behind the scenes. Nevertheless, all children audiences seemed to enjoy my story and as my characters came to live on the big projected screen, I believe that I have accomplished what I set out to achieve.

Making a thesis film was a fun yet challenging learning experience. I am extremely proud of what I have achieved and am very eager to continue my learning and exploration of 3D animation as I move into the working field. I am now able to utilize the technical skills I have learned and better apply those to my working knowledge. Having gone through the whole filmmaking process from beginning to end, and taking on the CG pipeline single handed, I have realized my strengths and weaknesses and will continue to develop myself both as a creative artist and as a citizen of the world. I am grateful to everyone who has helped me through this process and I believe my classmate, friends and I have all grown and learned much from making our own films.
Appendix I – Thesis Proposal

JOEY AND TEDDY’S BIG ADVENTURES
(working title)

BY

JING-YI HE

THESIS PROPOSAL
for MFA Imaging Arts
SCHOOL OF FILM AND ANIMATION
ROCHESTER INSTITUTE OF TECHNOLOGY
ROCHESTER, NEW YORK
MAY, 2009

Approved for Submission By:

_______________________________________________
Ferris Webby, Thesis Chair
School of Film and Animation
Proposal Date: May 7th, 2009
THESIS TREATMENT

Working Title: Joey and Teddy’s Big Adventures
Producer: Jiny He
Advisor: Ferris Webby
Budget: $7,442.80

Ideas Behind Film

The way children express themselves and the way they examine their surroundings through their lively imagination is a topic I have found to be fascinating. It seems that as a child, you have a lot more time to create fantastical stories out of everyday objects. A child’s ability to invent stories in which he becomes the central protagonist through a vivid and active imagination will be a key concept utilized in Joey and Teddy’s Big Adventures (working title). Through the story of Joey and his teddy bear Teddy, the audience will be able to live vicariously through a young boy’s active imagination and see everyday objects come to life guided by this child’s creativity. The notion that a child can solve and resolve dilemmas through his own cognitive fabrication of his surrounding objects will be a reoccurring motif presented in this short.

Story/Visual Concept

Following the active imagination of young boy Joey, first through his storybook that he reads to his friend, and then through his real encounters, this 3D animated short will evolve as Joey and his teddy bear friend Teddy set foot on the path to save the Koalas from the Wicked Evil Witch as she destroys their habitat. The story will be set in sub-urban Western Australia. The animation will have a storybook-like quality to its style in order to reflect the designs and creations of a young boy. The look of the characters and sets will be kept simple but fresh. To reflect the idea of a child’s imagination, the overall palette and color of the film will be kept warm and bright.
Synopsis:

Black screen. The sound of children’s chattering on the school bus crescendos in from the background.

DAY. INT – SCHOOL BUS

We see a close up on a book being held upside down. We hear Joey, age 10, saying excitedly: “Hey Lisa! Check out what I did last night!”

Another pair of hands grabs the book and turns it around. The book’s cover has a picture of a little boy dressed as a superhero and a teddy bear floating with a balloon. The title on the book reads “Joey and Teddy’s Big Adventures”.

A hand opens the book. The text on the right page reads in children’s handwriting: once upon a time. Joey begins to read along with the picture: “once upon a time…”

Hand turns page to show a picture of a witch, “…there lived a wicked evil witch… (pauses) oh wait!” Hand with pencil enters scene, the end of the pencil erases out the witch’s current nose, pencil turns, the hand draws a bigger nose, all the while Joey is saying “…with a wicked big nose… (snickers)… because of her wicked big nose, the wicked evil witch caught herself a wicked nasty cold…” Girl laughs. Joey continues with the story reading while the frame shows pre-drawn pictures on the pages of the book by Joey. He is telling Lisa a story about the wicked evil witch who is cutting down eucalyptus trees in the eucalyptus forest in order to cure her cold. Lisa shows concern for the koalas of the eucalyptus forest as the witch is razing their homes while Joey claims that the true cure to the witch’s cold lies within his own hands—his own cough drop with eucalyptus essence.

DAY. EXT—STREET OUTSIDE JOEY’S HOUSE

Scene transitions out of the picture book through a dissolve from the drawn picture of the cough drop to the final reveal of Joey holding his cough drop. The bus behind him drives away and Joey begins to walk home. Frame shows Joey’s feet while walking, music and credit rolls.

DAY. EXT—IN FRONT OF JOEY’S HOUSE

Frame shows back of Joey. He opens the side gate of the house which is also connected to the backyard on the right. He looks to the left “Teddy? Where are you Teddy?” He looks to the right to the backyard and spots Teddy. “Teddy!”

DAY. EXT—JOEY’S BACKYARD

Joey runs towards a lifeless Teddy. He surprises Teddy with a boo and Teddy is shaken into life. Teddy stands up, steadies himself and motions for Joey to be quiet. Teddy
moves to the side revealing behind him an injured baby koala. Joey picks up the koala and hurries Teddy into going with him to the eucalyptus forest to save the koalas before the wicked evil witch cuts down all their homes.

DAY. EXT—EUCALYPTUS FOREST

The wicked evil witch is using her wand to cut down the eucalyptus trees in order to make the essence to cure her cold. She constantly fails because her magic spell is interrupted and turned into something else through her sneezing. She sees a couple of koalas behind one tree and becomes frustrated. She lifts up her wand to cast a spell on them.

“STOP RIGHT THERE” Joey yells. The witch is startled. She stops her spell and turns around. Joey and Teddy are panting from running. The witch questions Joey and Teddy’s intentions. Joey holds out the cough drop, the witch makes fun of the “useless human candy” but the aurora of the cough drop reaches the witch’s nose and she realizes that the cough drop is the real cure to her cold. Joey bargains that if the witch restores the eucalyptus forest back to normal then he would give her the cough drop. The witch did not like to be told what to do. She lifts up her wand and motions to cast a spell, Joey and Teddy dodges the first spell. A chase begins. Joey and Teddy runs towards different directions while the witch pursues Joey. They run around one big eucalyptus tree. Teddy sees a spell nearly hitting Joey and runs in front of it trying to stop it. The spell hits Teddy and Teddy faints, the scene pauses as Joey is shaken by the sight of Teddy getting hit. Suddenly, Teddy begins to grow. The giant Teddy reaches to pick up the witch and holds her hostage. Her wand falls and Joey catches the wand. The witch is kicking and screaming. Joey lifts the wand and tries out a spell. After a few trials and errors Joey casts a spell to freeze the witch. He then uses the wand to restore the forest and Teddy. Joey then points the wand at the witch, puts the cough drop in her hand, and casts a spell. Joey says while the witch is sent flying away: “Now to send you back with a healed nose!”

Joey and Teddy then turn to the baby Koala and return him back to his family. The koalas are sitting together happily and quietly. Suddenly, the baby koala sneezes. Joey and Teddy look at each other in shock. Joey searches his pockets frantically. He finally pulls out an extra cough drop. He passes it to Teddy who throws it to the baby koala’s mouth who is about to sneeze, the baby stops.

Everyone gives out a big sigh of relief. Joey and Teddy collapse on the branch satisfied. Camera pulls up and rotates.

NIGHT. INT—JOEY’S ROOM

Dissolve into a darker room. Night time. Joey is seen sleeping on his bed in the same position he collapsed in on the branch. Camera pans to the left. Teddy is next to him in his bed. Camera pans down. The storybook and a pencil that resembles the wand are next to Joey. Joey moves in his sleep and the book moves a few pages. It reads “The End”.

Approach

This film will develop and finalize as a 3D computer animation with components of 2D illustrations inserted at the beginning and at the end. The style of a 3D animation could inevitably become very realistic due to the dimensions and nature of the 3D software, however, because of the children story/fairytale design of the animation, I will experiment with different types colouring and lighting to portray the mood and fantastical environment of each scene. This animation will rely heavily on character animation and lip-sync to fuse together a fast-paced and exciting short similar to that of a child’s imagination. The main focus will be on animation with simplistic modeling and texturing to give a sense of surrealism.

The film will develop using the following methods and software:

- Maya : Modeling, Rigging, Texturing, Animation and Rendering
- Zbrush : Modeling and Blendshapes
- Photoshop : Textures and images
- After Effect : Compositing and Editing
- Final Cut Pro : Editing
TIMELINE

Working Title: Joey and Teddy’s Big Adventures
Producer: Jing-Yi He
Budget: $7,442.80
Advisor: Ferris Webby
Start Date: May, 2009
End Date: May, 2010
Format: 3D Computer Animation
Runtime: 7 mins
**BUDGET**

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Appendix II- Pre-Production Designs
Character Color Variations
Joey
Character Designs:
Joey Expressions

JOEY
Character Designs
Witch Pauline

WITCH PAULINE
Character Designs
Teddy and Koalas
Appendix III- Storyboards

III-i Old Storyboards
III-ii New Storyboards