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KITHENGEE OF THE TREEHOUSE

BY

Michael Blackburn

Submitted in Partial Fulfillment of the
Requirements for the Degree
MASTER OF FINE ARTS

MFA Imaging Arts/ Computer Animation
SCHOOL OF FILM AND ANIMATION
ROCHESTER INSTITUTE OF TECHNOLOGY
ROCHESTER, NEW YORK
March, 2001

Howard Lester, Chair
Professor
School of Film and Animation

Marla Schweppe
Professor
School of Film and Animation

Jack Slutsky
Professor Emeritus
National Technical Institute for the Deaf / College of Imaging Arts and Sciences
TITLE OF THESIS: **KITHENGEE OF THE TREEHOUSE**

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Thesis Report

Since my first introduction to animation classes as an undergraduate at Evergreen State College, my main goal has been to create animation that looked professional, interesting and entertaining. An example of such animation is Toy Story, an entertaining film with great narration and characters. Producing professional animations like Toy Story was my primary reason for going to graduate school at Rochester Institute of Technology. The elements embodied in works like Toy Story are what I tried to duplicate in my thesis project. This paper will discuss the story I chose, the technical challenges, the aesthetic development and the discoveries that I made while pursuing the goal of producing a professional animation as a thesis project.

About the story

The process began with a choice of story. After a number of proposals were rejected by my thesis committee, I decided to go back to my roots. When I say my roots, I'm not talking about just my African-American roots but the roots of a previous project. Two years earlier I produced a 2D/3D animation called Weary Blues, based on a poem by African-American, Langston Hughes. The project received numerous positive responses and was wonderful to work on. The African-American experience has a great story-telling tradition that I think is underrepresented in the animation field and which is something that I wanted to address.

My present thesis animation project, Kithengge of the Tree-House, was rewritten from a Tanganyika folk-tale, The Children Who Lived in a Tree-House. This folktale represents a right-of-passage tale in which a young man saves his father during a life and death struggle. I chose a right-of-passage story because I want to present the African-American experience from a positive perspective, not the negative perspective that I believe is often presented in the mainstream media and in the entertainment industry. In many cases, I find that African-Americans are portrayed as subject of derision and laughter. For example, instead of looking at the qualities that enabled African Americans to organize
themselves to overcome slavery, African American's are often portrayed as disempowered individuals with no control. But the reality is that the slave experience is full of examples of how African-Americans fought and overcame slavery with courage, intellect and a strong sense of purpose. Because I wished to contribute something that would portray the qualities of African-Americans more accurately, I chose the universal themes from The Children Who Lived in a Tree-House for my animation.

Another reason I chose this particular African folk tale is because it is a "Wisdom tale." Wisdom tales are oral or written stories that are handed down from generation to generation. An example of a wisdom tale is the Brothers Grimm story, The Fisherman and His Wife. In this tale, the wife is granted everything she asks for by a "magic fish". But she is so greedy that even after becoming a king and later a pope, she asks to be made a god. The request so outrages the magic fish that everything she had asked for is retracted and she is returned to her previous state of poverty. In Grimm's tale, the teller is trying to convey the dangers that exist in the world. My film, Kithengee of the Tree House is similar to Grimm's fairy tale. Its purpose is to teach a truth about the workings of the world.

In my film, the four characters are a father, a boy, a witch and several moose. The film opens with a herd of moose running through the woods. Later you see the father stalking then killing a moose. The father carries the moose home and calls to his son living in a tree house to let down a ladder so he can climb up. The witch is lurking in the bushes watching the interaction between the father and son. I chose to place the father and the witch in similar activities (stalking) because I wanted to show that they were both predators. The father hunts the innocent moose and the witch hunts the innocent boy. I hope by showing this relationship that the viewer would see them in equal light. There is no moral high ground where one is better than the other. The father, boy, moose and witch are just trying to survive. They all need to eat. For both the father and the moose the death of one of their own is equally tragic. As a human I lament tragic loss. I believe that animals may grieve their losses as well, and that they remember their loss in their collective consciousness. The witch, like the father, is just another force. She is a force the boy has to learn about, survive and overcome in order to complete the ascension to equality with his father.

As the story progresses, the clever witch tricks and captures the boy. The father in trying to rescue his son is defeated in battle. The son observes the defeat and realizes the only way to save his father is to save himself. The witch underestimates the boy and while celebrating her victory over the father, the boy
sneaks up behind her and uses her broom to knock her unconscious. This is how the boy moves from a victim to a victor. It is how he learns fundamental truths about the world. I feel that folk tales like this one are very important for children because they help them learn their place in society, and their relationship to their peers and the world in which they live.

**The Technical Process**

To increase character development, I wrote additional dialogue that was not in the original story. This helped me develop lip-sync abilities while clarifying my characters through their verbal interactions. I wanted them to be seen as if they were modern actors in a play. Using professional animation like "The Simpsons" as a model, I began to develop a series of visual scenes. I story boarded the scenes and wrote the dialogue to go with each. This was a long involved process that involved reviewing my ideas with my fellow classmates. Utilizing their feedback, I revised the storyboards many times until they were satisfactory. As I worked through the process, I found out which ideas worked and which did not.

For the next step I brought three actors into a studio and recorded the dialogue on tape. Because I had limited studio time, everything was done in one evening session. I recorded several takes of all the scenes. The voice talent was very good and with a little creativity, I was able to avoid recording additional dialogue. I then transferred the dialogue from tape to the computer. Using lip-sync software, I translated the dialogue and storyboards into over ninety scenes of animation. The translation process continued throughout the 3 years it took me to make my film.

The animation software I used was Lightwave 3D. I chose to use this software for two primary reasons: 1) I had five years of experience with Lightwave on previous projects, 2) I began to develop carpal tunnel syndrome from using a PC mouse. By using Lightwave at home I could overcome this physical impairment by using a drawing tablet. Although working at home kept me isolated from my classmates, I found that it was the best environment in which to work given the circumstances.

One of the most unexpected things that happened to me in completing my thesis project was to begin working for Xerox. At Xerox I ran a video-editing facility. During that time I enlisted the help of a co-worker and former RIT animation student, Curt Markham, to provide peer review of my project. Curt supplied great insight concerning timing of action and helped me to decide if a scene worked or not. Curt
also aided me in making the final edits. With the support of my co-workers and the use of the editing facilities at Xerox I was able to finish my thesis during the summer of 2000.

**Overcoming barriers**

Despite two years of class work at RIT, when I started my thesis I felt wholly inadequate to the task of creating the type of animation I envisioned. I remember clearly my first scene required me to produce a walk cycle. Two factors got in my way. I didn't know how to do a walk cycle and the Inverse kinematics system in Lightwave was totally unfamiliar to me.

I overcame my animation difficulties through the careful review of all the animation resources I could find. I found the Rochester Public library to be a great source of animation books and videos. I read all the books I could find and I reviewed films over and over again. One book that was particularly valuable was “The Animation Book by Kit Laybourne”. In addition to reading and viewing films, I shot video of myself with a fellow student; Wan Chiu and I watched George Stanvich act out the actions for his animation before animating. From the video and the acting on screen, plus the information that I gathered from books, I began to break down the mechanics of walking. Still, the inverse kinematics problem in Lightwave was very difficult to overcome. Lightwave is considered by many to be a professional software package. We see examples of animations produced in such television programs as *Space Above and Beyond* and *Star Trek* using Lightwave software. However creating flying spaceships is very easy, but creating moving and walking characters is not. In order to create moving characters you have to use inverse kinematics and a feature called “Bones”. Lightwave’s inverse kinematics and Boning system are similar to that found in Alias Animation Studio except that the development of the inverse kinematics is very primitive, and how to orient the model while placing the bones is not fully explained in the software’s texts. I was forced to consult the Lightwave user groups to resolve my conflicts. From reviewing messages on the Lightwave Internet mailing list, I found many answers. But it took more than a year plus a software upgrade to finally resolve all of my inverse kinematics difficulties.
Aesthetic development

The design of characters started with pencil drawings on paper. After developing a complete model sheet for each of the characters I began designing them in Lightwave. Lightwave is a robust modeler. It has most of the modeling tools that come in the best 3D programs. One of Lightwave’s modeling tools is Metamation. Metamation is the process of placing a complex lattice around a square polygon primitive. By increasing the complexity of the square and applying a lattice, a modeler can pull on the model surface and create all types of 3D objects. I created the head of the witch, the father’s body, the hands of all the characters and feet of the father and the son in this fashion.

Because this was my first time using Metamation, I know that my future 3D characters will be much better. This feeling is supported by the wholesale increase in the usability of 3D software since I first started modeling my characters three years ago. The quality of 3D work is so good that it is hard to tell the difference between a 3D character and a real person.

I texture mapped the 3D characters with an eye toward an African motif. I scoured stores to find different types of cloths and African prints. I scanned them into the computer and mapped them onto the bodies of the characters. The general environment of the characters was a forest. So I dressed the characters as if they lived in a temperate forest and not a tropical rain forest.

The design for all the props and background scenery required the same type of details I used in designing the characters. These included a forest of trees, one tree house with all of its contents, and a witch’s house fully furnished. The house didn’t require the use of metamation because it was built with polygon primitives (squares, planes and balls). By using tools such as a bevel, Boolean geometry and cut and paste, I was able to put together all the furniture and fixtures required for my set. I scanned in textures and placed them on the furniture and fixtures. For the trees I used “bump map” textures and for the pot of boiling water I used a moving displacement map. Similar steps were used to fashion the characters.

Because trees are complex and beautiful objects, they were among the most difficult objects to design. I had a lot of trees in my scenes, resulting in a lot of polygons per scene. With the increased numbers of polygons, the time needed to render a scene greatly increased. I overcame the problem of too
many polygons through a background image map. An image map is a 3D-rendered picture that is placed into a background of a scene or set. I created a background map using the same trees that appeared in the staged area. I made sure the background map lighting looks the same as scenes it is placed into.

Another difficulty I overcame was representing a tree with thousands of leaves. Once again, thousands of leaves mean thousands of polygons. I overcame that problem by texture mapping shapes onto a surface. I used “cut out” shapes which when texture mapped appeared to look like real treetops. I made leaf shapes that cast shadows like leaves. I duplicated these leaves and used them in close-ups. As a result, the leaves created a forest like atmosphere, which was a perfect stage for my characters.

In order for all objects and characters to show clearly in a scene, I chose skin tones, highlights and texture maps that worked well in different lighting conditions. I determined the correct highlights by starting with a basic lighting setup. I started with three lights in an effort to mimic natural lighting. After repeatedly testing my lighting setup, I got the desired results. By testing and revising the lighting setup I could achieve a consistent look for each scene.

To deal with shadows I ray-traced my entire movie, which meant a shadow would be cast onto, and by, all 3D objects. I placed one light universally in the same position that was intended to shine like the sun and cast similar shadows in all scenes. Other lights were placed throughout scenes to light areas where the main light was blocked. These other lights had reduced intensity or had their shadow casting turned off to give a more realistic effect.

To correctly light a scene, many hours of test renderings were required. The number of lights used per scene was dependent on the placement of the camera and whether the main light was blocked. For interior scenes, the light from the outside was rendered as window lights whereas interior lights were placed in fixtures. The fixtures would appear as light bulbs with some type of texture luminance map on them. In the witch's house alone there were over twelve lights, making lighting a complex undertaking.

The computer power to ray-trace these many lights forced me to turn off the shadow casting capabilities of most of these lights. This reduced rendering time from 20-30 minutes a frame to five minutes a frame. The need to reduce rendering time was very important for animation. I calculated at one point that it would have taken me ninety days at 24 hours a day in rendering time to complete my film if shadow casting had been enabled. That was not feasible.
Discoveries

After three years of working alone on my thesis, I look forward to working with others on future projects. I believe that computer animation is one of the most difficult art forms to create successfully, and one that calls for unexpected physical demands. The long hours of intense work in front of a CRT was a serious challenge to my eyes. Further, the untold hours of staring at a computer screen in combination with sitting in a chair created other discomforts. The work took its toll on a body designed to move and on eyes designed to scan both the close and distant environments.

Regarding the curriculum, I believe that if I had been trained step by step on smaller projects, with a focus on the mechanics of animation, the process of producing my thesis would have been much less difficult. In The Animation Book by Kit Laybourne, the mechanics of animation are taught through repeated exercises. I used some of these exercises to work through animation problems. For example, Laybourne showed how to create a walk cycle. Rochester Institute of Technology's curriculum of studying software, technology and filmmaking needs to be closely merged with the mechanics of animation as presented in Laybourne's work.

Story development is also a very important part of the curriculum of Rochester Institute of Technology. I have learned a great deal about story telling and character development from my classes with Professors Jack Slutzky, Eric Timmerman, Marla Schweppe and Howard Lester.

I must admit that my story had some weaknesses, most of which were due to its length. My desire to make this an all or nothing project forced me to work on a film that was longer and more difficult than it should have been. But by doing this project, I learned so much that I look forward to my next animation. I no longer desire to work alone but look forward to creating future projects with the cooperation of fellow artists. I feel that I have increased my knowledge of animation while increasing the knowledge of others about African-Americans. Kithengee of the Tree-House has brought to an end one phase of my development, and the beginning of another.
Appendix A: Original Thesis Proposal
“Boy ManChild”

Synopsis

The scene opens to a wide shot of a forested area. A tree house sits in one of the large trees. Two people are standing under the tree house, Oba, the father, and his 9 year old son, Kithengee. The father kneels down next to the son. The father points up at a ladder hanging from the tree house. The father speaks to his son. The son responds by asking a question. The son points to the leaves above them. The father pats the son on the head and sings him a song. The boy listens and smiles, while nodding his head up and down.

As the father retreats into the forest, the boy pulls the ladder up into the tree house. A witch is watching. She sticks her head up from behind the bush where she was hiding. She notices a bug moving on a branch next to her right arm. Her tongue quickly darts out after the bug.

The witch sneaks over to the tree house, looking from side to side as she travels. She looks up and begins to sing the same song she heard Oba sing. The boy kneels at the tree house doorway. The boy turns his head from side to side. His smile turns into a frown. He grabs a large rock with two hands and drops toward the ground below.

The rock hits the witch on the head. She runs in circles screaming and cursing. The witch runs away from the tree house as the boy's laughter echoes through the forest.

The witch is standing in her home with a big bandage on her head. She is thinking out loud. She mixes a concoction of hot liquids. She drinks it down as she screams with pain. Her eyeballs swell and her tongue blows up like a balloon. She goes over to the anvil and, grabbing a hammer, beats her hot tongue into the desired shape. She wraps her tongue with a wet cloth. Steam comes off her tongue as she sighs with relief. Looking at her tongue in the mirror, the witch sings the song she must sing at the tree house. An evil smile comes over her face.

At the tree house, she sings the song again. The boy hears the song. He smiles and runs over to the lever holding the ladder. He lets the ladder fall to the ground.
Seeing the face of the witch at the top of the ladder, the boy runs to a corner of the tree house. He grabs his spear. The boy turns his back against a wall. He points his spear at the witch. The witch throws a spell. The spell hits the boy in the chest and paralyzes him. The witch quickly tucks the child, who is still holding his spear, under her arm. She walks towards the ladder. All the boy can do is scream his father’s name.

The father returns to find the rope-ladder swinging in the wind. Looking up the ladder, he calls for his son. Tears appear in his eyes.

Looking left and right, the father follows the foot prints of the witch as they disappear into the woods. He approaches the witch’s house. He is close enough to see his son shackled and weeding a field. The witch stands in the doorway nearby, never taking her eyes off the boy. The father waits hiding behind a large bush, until his son comes close enough to hear his whispers. The father gives his son instructions. As the sun sets, the boy walks very slowly into the witch’s house. He is dragging the ball and chain which is attached to his ankle.

The witch walks out the door. She yells to the boy telling him to make her dinner. The father quickly moves to a bush close to the house. The witch returns to see empty pots and a cold hearth. She screams at the boy. The witch walks up to the boy. She is carrying the boys short spear. The boy begins to scream. The shackled boy tries to back away. The father crashes through the door with bow and arrow in hand. The witch quickly turns toward the father. The father shoots at the witch. She ducks as the arrow zings by. As she ducks, she drops the short hunting spear that she was holding. The father reaches for another arrow as the witch’s paralyzing spell strikes his shoulder. The father is instantly frozen. The witch pulls out a huge hunting knife. Her face is contorted with a smile and she begins to drool. Her face changes quickly to a grimace of pain as a dull thud is heard. She turns towards the boy while grabbing at the small spear stuck in her back. She makes a groaning sound as she falls dead. The boy drags himself over to his father. He hugs his father. The father quickly recovers from the witches spell. He leans on his son as they slowly walk away from the witch’s house. They both have smiles on their faces.
Method

The project will be a combination of hand drawn backgrounds with three-dimensional characters. It will be animated in Lightwave and Director. There will be lip sync. I will employ a composer for my musical score. I will render the three dimensional material in Lightwave 3-D and combine it in Director. In some areas I will draw over the three dimensional renderings with Fractal Painter. I will create effects such as tears and saliva that way. The final project will edited on the Avid and dumped to S-VHS for presentation.

Thesis Budget

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TOTAL COST: $ 750.00  27,000.00  27,750.00
Appendix B: Original Storyboard
Kithengee of the tree
Appendix C: Color Stills