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I Am Arbor

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I Am Arbor

by

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College of Art & Design

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Abstract

I Am Arbor is a film that captures the beauty and tragedy of Trees in our civilization, which are going through tragic transformations due to rapid urbanization. Perhaps for the first time, this short movie has created a narrative that is anchored on the feelings and emotions of Trees, their existence as families, and their collective contribution to human existence. The movie blends live action and Computer Generated Imagery (CGI), to merge real and imaginary worlds; all of which comes together to create a touching story.

The film is a product of a childhood influence coupled with children's literature. The director's mother had a dream in which she claimed that she dreamt of a Tree, where the leaves, flowers and branches appeared as real-life characters- as though they were members of a grand family. She could hear them talk, laugh, smile and dance. This prompted research, leading the creator to Shel Silverstein's *The Giving Tree*. In this children's book, there is a symbiotic relationship between an ever-giving tree and a human boy. Further research, lead to the movie *The Lorax* by Dr. Seuss, which explains the need for Trees in an imaginary town of plastics and metals.

I Am Arbor portrays an engaging and emotional friendship between a child and a Tree transporting viewers to an imaginary world of happiness, celebration, and joy; only to lead to a very tragic end where the protagonist becomes the antagonist as time passes and modern compulsions of society take over.

This supporting thesis document narrates the incredible journey that has been undertaken in making this movie, including navigating the difficult terrains of a complex project -such as live action and CGI. This paper attempts to discuss the triumphs and tribulations at every stage of this journey, explaining the process, the lessons learned, the

compromises and most importantly the experience of a film maker freshly minted out of a graduate program with all its scholastic trainings.

While this paper attempted to discuss the stages of this movie, it also includes the dilemmas faced during the crossroads throughout the creative process, documenting the choices made by the creator as they shouldered most of the work with colleagues and partner constituents. This project would not have been possible without the air cover of Mark Reisch, Thesis Chair; Thomas Gasek, Thesis Committee; and David Sluberski, Thesis Committee. Their inspiration and constant encouragement served as emotional fodder without which this project would have remained an unfulfilled dream. In the language of the core sentiment of the movie, the Director said, "I can only say that *I am here* today, simply because my professors, colleagues, partners and parents *Let me be there.*"

Introduction

I have always been strongly opinionated about the world and its problems, but I always refrained from debating because I wanted to avoid the conflict that arose between differing opinions. Furthermore, these debates often end with at least one party ignoring the other's points- no matter how valid they are- and cover hard to discuss optics. Instead I found an alternative way to express my opinions: art. My passion is films.

This idea for this project took root one warm morning when I was sitting at home drinking my usual cup of tea. My mother woke up and came to me excited because she wanted to share a very unusual dream with me. She told me how she had dreamt of flowers and leaves running and dancing around in a tree. She then suggested to me, "Why don't you make a film about this?"

At first, I was skeptical; I didn't know what to make of it, but the idea stuck in my head. Once it was planted, I thought about all the opinions and ideas I had about deforestation, the environment, and global warming. Immediately a story began to take shape, and I started my research on films and cinemas incorporating these topics.

The most I discovered were documentaries and infographic videos, which were realistic but did not have a lasting impact on the viewer. I came across the book *The Giving Tree* by *Shel Silverstein* (Silverstein)*,* which was published in 1964. The message of the book had a strong impact on me and mirrored the impact I envisioned. I also researched several movies that depict the relationship of trees and humans. One movie worth mentioning is Dr Seuss' *The Lorax,* produced by Illumination entertainment and distributed by Universal Studios. Here the narrative focused on the need for Trees in a hypothetical town that values

plastics and metals. The movie ends with an inspiring comeback of forests in a town that had corporations selling oxygen and forced people to live in an artificial world devoid of nature.

My focus for the movie is not just on the life giving force of Trees but also on characterizing the elements of a tree, such as flowers, leaves, and twigs; their interplay of emotions; and the threat they face due to urbanization. I was motivated to create a world that goes into the depth of the Trees, where the blossoming of a flower is like a childbirth and that is celebrated and the Trees are made up of sub characters. This creative choice, I believe, adds a novelty to the narrative that both fits into the larger canvas of my afforestation theme and brings in a touching story of the little characters that constitute a tree. It can impact the audience in several ways and compel them to think about our life force- the one we do not hesitate to kill.

With this research and a new found vision, a peculiar dream of my mother not only inspired me but allowed me to embark on a journey that provided a different view of Trees; Trees that speak out saying, "I am Arbor."

This was my catapult, my starting point to begin this film. I started sketching immediately.

Review of Research

Once I started researching this particular topic, I came across many stories and was inspired to create not only just a empathic feeling in my viewers , but instill in them a sense of duty towards afforestation. The vision that I had in my mind was, in a way, quite complex because it is difficult to show some of the complexities of this issue in animated form; therefore, I had to include some sort of live action so as to enhance the sense of empathy and interaction with the audience.

From that point, my research was mainly focussed on technical aspects because I knew I would need to combine live action and CGI together. Fortunately, this is my main interest, the area I am most passionate about, and my forte.

Much of my research included watching movies such as *Avengers*, *Iron Man,* and a plethora of Sci-Fi films because each has a mix of live action and CGI, and I wanted to mimic that style in my film. Combining that style with the concept of 'The Giving Tree' was indeed a difficult task. I wanted to take the concept of give and take between the Flora and Homo Sapiens to create a feeling within the audience.

From a technical standpoint, I studied tutorials on Pluralsight to strengthen my software skills; these included NukeX and Nuke Studio, where I learnt deep compositing and CGI compositing. Since I was including live action within this film, I continued my research on how to conduct a professional live action shoot, due to the fact that I was lacking experience in it. I started talking to couple of my classmates within the School of Film & Animation who were focussing on the production area to get an idea of how the entire process works.

Process

Pre-Production Stage

The sketching period began with regular thumbnails. I wanted to include a lot of dramatic camera angles and movements to show the feeling of dramatism in this film, so I decided to include extra camera movements in the first version of thumbnails.

A main goal was to establish a feeling of empathy in the audience towards the life of Flora, and the only way to evoke those feelings was to anthropomorphize the Tree into a character. Through that process of imagination, I ended up making small characters within the tree, in order to create a new and a different world inside.

I started sketching out the characters and different versions came out. I wanted each character to have their own identity and come across as "cute" in their own way. Eventually, I was very pleased with my sketches, and I felt they perfectly work in the story. However, I was then faced with the challenge of giving each character a purpose; I obviously couldn't just have them roam around in the film without a reason.

It was at this point that my high school knowledge of photosynthesis came into play. Humans have a purpose in life of receiving an education, growing, working, providing for their family, and serving the community, and like us each part of a plant has a purpose. I needed my characters to have a duty towards the world and themselves. Hence, they became responsible for providing oxygen to the world- a purpose I now had to show visually. To achieve this, I played with concept of coloured gases, making carbon dioxide as a red gas and oxygen as a blue gas. To me the color red denotes danger and alarm- a good choice for carbon dioxide-, while blue symbolizes life and serenity- for the world that is oxygen. I was

inspired by Dena Pryzbyla's article on color psychology, in which the author categorizes red as danger and war, as well as a symbol of passion and energy, while blue depicts empathy and compassion (Przybyla). The live action visual effects mirrored this concept through human characters breathing in oxygen and giving out carbon dioxide, and Tree characters doing the reverse -taking in carbon dioxide and giving out oxygen.

Though most of my challenge for creating purposeful character was dealt with, I wanted to add more depth to the Tree character, so the concept of ceremony and tradition was introduced. I wanted show the blooming of a bud into a flower as a ceremony as that provided a sense of birth within the Tree world and demonstrate how oxygen is a life source for the world. It is all connected; through the birth of Trees and flowers we humans are born, remain alive, and continue to exist.

Having this new direction, I started sketching down all of these characters and ideas in order to compile them into one final story shown through thumbnails.

When it came to the live action aspect, I wanted to create a strong sense of empathy. *The Giving Tree* shows the bond between a child and a Tree, so I used this inspiration. I wanted a child who is swamped with energy to walk. He needs oxygen to continue his antics, which he eventually gets from the Tree and its characters. The moment he gets the oxygen, his energy is revived and a bond is born between the two. Originally it is one of joy, but it turns to melancholy. With the passage of time, the child grows and becomes a part of the modern world, returning to chop the tree. During this time I wanted to show the perspective of the characters, to demonstrate their mixed feelings of grief, shock, and disappointment. The struggle of this entire story was to find a boy who looked like the man. I have to congratulate my casting director who managed to get a boy and his father as actors for the roles; it really helped that both of them looked alike and provided a feeling of authenticity.

While the sketching of the storyboards was going on, I began searching for the rest of my crew and coordinating with them. This was my first big production, and I knew that pre-production was an important part of the process. Thus, I began meticulously designing the call sheets and coordinating with my Director of Photography to gather the equipment and arrange the space for the shoot. This was one of the biggest challenges I faced. The pre-production phase finally came to an end, but I knew at that point that this was just the beginning, and I said to myself "Let the production begin!"

Production Stage

I was very nervous to begin the live action component of my film. I knew I had all the theoretical knowledge that I needed, but the application of this knowledge , in a practical environment, was nail biting.

During the production phase, while designing all of the call sheets and proposals for the equipment rentals, my line producer suddenly dropped out. He was the sole point of contact for each person on the crew and each activity for filming. This created a huge problem, as I had delegated many tasks to him and completely devoted my time to the CGI side of the movie. Now I would have to put on many unknown hats, but this is a struggle that can occur during many productions. I took on this challenge and successfully coordinated each activity and communicated with all parties effectively.

Originally, I had planned a two day live action shoot for this movie: one for the man and one for the boy. This would allow me to space out scenes and focus on directing without worrying about a time crunch. However, due to the unavailability of studio time and lack of budget for renting out the equipment for 2 days, I had to compress it into a single day shoot.

Foreseeing the need to work quickly, I took my Director of Photography (DOP) and my 1st and 2nd Assistant Camera Crew the night before to set up at least fifty percent of the things- to save time the next day. This meant production really only waited on actors to finish with make-up.

During the time of the shoot, it was very important for me to direct the actors in specific ways to convey the desired emotion of the scene. For example, in the beginning of the boy's scene, I needed the boy to be able to show his struggle of not breathing. The subtext of not breathing would be wanting to breathe and looking for a place to escape- a place to feel peace. Transitioning this emotion of loss into a sense of relief when the oxygen is received from the Tree had to be coupled with the Tree becoming excited to meet the boy and the boy feeling amazed to meet the new characters within the tree. This was a tough act for a little kid.

The way I went about directing the child was by giving him situations that he could relate and react to in order to evoke the feelings I needed him to convey. For example, I asked him to remember situations when he did something wrong and how his father was disappointed that he misbehaved. This feeling of guilt and shame needed to be brought out to make him walk sluggishly in the scene where he needed oxygen. After shooting the scene multiple times with some successful captures, I told him to remember the moments when he ate a lot of cake and candies in order to evoke an energetic response. Tapping into that specific emotion made him very chirpy, and that's exactly what I needed in the 2nd part of the scene- the one in which the boy is satisfied and refreshed after receiving the oxygen.

When it came to the man, I gave him the complicated task of thinking of an object that gave him life but at the same time he had to kill. It was an interesting exercise for him, and he was reminded about his late grandmother, which made him feel remorse and extreme

sadness- to a point where he had tears in his eyes on set. While I felt sympathy towards his sad memories, those were the exact emotions I needed him to portray while he was chopping down the Tree. I saw my vision in this actor, and at that moment I told my DOP to start recording. Overall, I was very satisfied with the beautiful captures.

The CGI part of the film was rapidly working in my mind. The production of the CGI elements began a little before the live action shoot. The CGI was also very challenging, especially visualizing the characters living in the Tree. Creating a whole different world for them required a lot of thinking and planning.

I had a plan, a sketch, and an idea for the Tree that I needed in 3D. When I started designing the Tree in 3D, I made sure that I put a lot of branches and twigs in a random pattern to create a space for the characters to walk around; this also created an ambience within the Tree, giving it a sense of being a world of its own. This gave me the opportunity to play around with my camera angles and my composition, which had been developed in pre-production. When inside the Tree, I didn't want the outside world to be visible because that would take the audience away from this imaginary world. Therefore, I filled up the branches with a lot of leaves. This not only confined the space, but also gave me the ability to light the scene with the artificial Sun. As a result, I could create very dramatic lights with only a couple of rays falling on the characters. Once the Tree was done, I started texturing it. Because there were a lot of close up shots that needed these textures stand out from the characters in the scenes, the texture's style had to be realistic. Plus, the realistic element of this would help to blend the live action and CGI components better.

The modeling and rigging of the characters were outsourced to people who took a look at the character sketches that I had made and worked closely with me to replicate the same characters in 3D. I wanted the leaves and the twigs to have the ability to hop from place

to place, especially during the blooming ceremony. The flowers, however, had to be still; they had the presence and elegance of being a new member to this community, so their grace was enough for the other characters and the audience to be awed. Making them move would somehow remove this sense of grace and lessen their overall impact. I wanted all the other characters to be attracted to the blooming of a flower and much like a human new-born, they could gain this attraction simply by being, not by moving.

Speaking of the flower, I wanted to add a special element to it. I didn't just want to animate it and keep the regular movements on it. I wanted to add certain dynamics to the petals, and this was a struggle because there were a lot of things that needed to be considered: for example, the strength of the petals and how this strength affects the overall movement. The design of the flower had outer and inner petals, and I had to adjust them properly so they didn't overlap with each other. Adding constraints and boundary boxes to each of them was also important. This wasn't the end of the flower challenges; I needed to be able to animate the petals.

To accomplish this, I had to make two versions of the flower: one with dynamics and the other without. The reason for this was to provide my team and I the ability to animate the petals during the time when the bud transitions into a flower. During the second blooming ceremony, where the old flower is present in the background as a new bud blooms, two different versions of flowers were extremely beneficial.

After all the designs were modeled and rigged, I focussed on the texture for each one of them. I wanted the feel of the textures for the characters to be completely different from the Tree, while at the same time maintaining a realistic quality. Since all the textures were of trees and leaves, I didn't want the characters to be blended with the background, so I chose to

change the variety of bump maps and normal maps, which achieved my vision of keeping the characters realistic and unique.

After finishing the textures, I had to prepare the main scene for animation. The Tree had a lot of branches and leaves, and I quickly found that it was complicated to replicate the scenes and angles that I needed during the animation stage. This is where I used a feature in Maya called "scene locators," which enables the user to pinpoint an exact location in a 3 dimensional space- even in the maze of frames that constituted the Tree. Therefore, I could animate at precise locations and was able to accomplish my transitions across scenes within the tree.

As the animation began, I put the main Tree as the main scene file where I would reference everything else within it from an assets folder- per the project path.

The Blocking Phase

This phase is the first phase of animation, which requires the most creative input from the animator. I was the sole animator for this project. This animation included activities such as creating the main poses for every single character and making the first draft of camera moves. I tried to keep my camera moves final during this phase, and this decision caused this phase to take the longest time to complete. There were a lot of complications for the blocking during this stage because there were very many odd glitches, which are typical in Autodesk Maya. I worked around this problem simply by continuously closing and restarting the program and clearing the cache. Eventually, this set back was worked through, and I continued with the blocking stage. The poses that I chose to give my Tree characters were very happy and enthusiastic. I wanted the bond between the characters to be very tight and have the ability to create a sense of a good comical timing. During the first blooming of the flower, I designed a scene where the leaves high five each other and the twigs display

jealousy over this bond; as a result, one twig insists a leaf high five with him as well. Little does he know that his strength will propel the leaf away; twigs are more dense than leaves. This causes the twig embarrassment, while at the same time providing some comical relief.

When it came to the second blooming of the flower, where the audience is led to the tragic ending, I wanted to create dramatic camera movements that would give a sense of tension, suspicion, and anticipation to the audience. To achieve a dramatic scene, I kept a lot of camera zooms towards the characters to keep the scene dramatic, and to create suspense I added camera shakes to mimic the effects of the man hitting the tree with the axe. I didn't show the man for the first few hits on purpose, as I wanted the audience to get a sense of discomfort and simultaneous curiosity. During the first few camera shakes, the audience could be misled into thinking an earthquake has happened. I also embedded camera zooms focused on the confused flower, and included a shot where the flower looks off-screen with a sense of disappointment and shock. Immediately, we cut to the man chopping the tree with his axe; it is the same boy from before all grown-up and part of the modern world. Both the dramatic camera movement and cuts help the audience make the connection that this is the same boy who played with the tree earlier and is now cutting it down.

The Splining Phase

This is one of my favorite parts of the entire CGI workflow process. This phase is where the blocked movements are smoothed out and the movements are refined to make them look realistic and fluid. Working with the graph editor and all the previously created key poses was a very exciting time. My first round of splining went smoothly and was a pleasure to work on, but splining and getting a perfect animation in one round is nearly impossible-unless you have superpowers. I continuously shared iterations with my thesis advisor and committee, and they suggested many changes, which gave me great ideas and pushed me in a

positive way to make my animation even better. This was especially true with the movements and the animation principles. Hence, I kept jumping back into iterations for my splining phase and refining the movements, the jumps, the expressions, and the camera angles to make the overall product enhanced and engaging. After a couple of iterations, we came to a ground where the animation was agreed upon, and I was satisfied with the look of the overall product.

The Lighting Phase

This is another one of my favorite phases. In this stage the scene becomes complete; it is where everything comes to life. The lighting choice that I chose utilized warm tonalities, but the light set-up in the beginning scenes were different than that of the end scenes.

The beginning scene is set in the early morning and has bright and happy feel; I chose to include bright key lights, strong fill lights, and strong rim lights- in order to have them stand out from the background. I couldn't use the Sun light as the key light because the leaves were mostly blocking the pathways, but when the sun is included as partial rays falling on the branch and on the characters, it creates a nice pleasing look. All the other lights were artificial, but I replicated that light color and its temperature to be the same as the sun, which gave it a very natural and intriguing look.

Replicating the same lighting technique across the various scenes was challenging- not as a concept but from the perspective of labor. I had to keep the values, exposure, position, intensity, color temperature, and other parameters exactly the same across all the scenes in order to ensure continuity in the lighting. I utilized an old-school approach of

writing each and every single one of the parameters in my little notebook and replicating them one-by-one across the scenes that had similar lighting. Towards the end of the film, the lighting was dim; the scene is set at the end of the day and needed lighting that replicated a setting sun. The lighting also needed to evoke a realistic melancholy. It should also be noted there the background includes a cityscape filthy with pollution. This meant that the lights needed to be a bit dim. I made the Sun a little warm by reducing its color temperature. When it came to the artificial lights, I still used the basic three-point lighting; however, I made the fill light very negligible and focused mostly on the key and rim lights. This created a very dramatic look that made one side of the characters dark and the other side bright. The cameras were focused mostly on the dark side; this creative choice was inspired from Hollywood films that are usually shot on the dark side. Overall, it helped to create a very dramatic look.

Even during the shoot of the live action portion, I made sure I followed the same lighting style during the two different scenes, and I ensured the camera was recording the log, which gave me access to a high dynamic range that I could manipulate in post-production: a bright sun rise for the kid and dark sun set for the man.

In some parts of the scene, there were places that needed to have a background light. There were scenes where I envisioned rack focusses and the background needed to be lit properly, so managing that was essential. The background lights however were completely different in each scene; therefore, they had to be done separately and couldn't be replicated.

The Other Scenes

There are two scenes in the entire movie that did not include CGI. The scene of the tree growing from a sapling was done in 2D, and the time-lapse of the tree growing as a city grows in the background was also done through 2D animation.

The process of capturing the growth of the sapling was a bit complicated. I had to work around this by using a royalty free footage of a sapling growing into a tree. I took that footage and created a rotoscopy for the entire scene. I took the masking data and re-adjusted the mask to match it with my tree model. Due to this, I had an alpha matte of the tree growing. The next work was to fill in the mask with some data and particles. I created particles within the mask and manipulated them to make it appear as though the leaves were growing out, and eventually, I replicated it to look like the Tree.

For the time-lapse, I took the model of the Tree and used digital painting in Photoshop to replicate the same Tree and create a 2D version of it. I used that to animate it and slowly allow it to grow. For the city background, I wanted to create a speed up effect, where the city grows. I used Trapcode form within After Effects to create a city and manipulate its parameters to make it look as if the city jumped out in the background. I then added effects to make the city slowly generate black smoke, which eventually fills the frame and serves as a transition to the next scene. This scene was extremely important, as it symbolizes the growth of humanity and its elements, as nature is simultaneously growing.

The Render Set-up Phase

This is the second most time-consuming phase in the entire CGI workflow. The render set-up phase involves setting up the scene for rendering and ensuring each frame is rendered with great quality. At the same time, it must be optimized in order to ensure that it takes the least amount of time. Finding a balance between both of them, and being able to compromise on something- either the quality or render time-, was the hardest decision.

This set up not only included optimization of the scenes, but making sure each scene was ready for post-production. This meant adding Arbitrary Output Values (AOVs) such as, direct diffuse, indirect diffuse, specular direct, specular indirect, Ambient Occlusion, shadow

pass, Z depth, and ID pass. All these were needed for particular scenes, meaning I worked in render layers and added absolute overrides for each AOV corresponding to their particular scenes. Some scenes had more indirect light than direct light, so it made sense to remove the unnecessary AOVs through absolute overrides. This allowed me to have full control for post-production and compositing- while grading and color correcting.

Apart from regular AOVs, I added different AOVs as lights in their individual lighting group and added these groups as their own AOV. Therefore, by the end of test renders I had each and every individual light working as an AOV. This allowed me to control the light individually in the compositing stage, in order for me to manipulate brightness or color if it didn't match. I was able to avoid re-rendering the entire scene, thereby saving time and resources. I had to be extra cautious because the movie is in 4K. For each scene using the Arnold Render View, I started checking the renders and tweaking parameters within the textures, the lights, etc., so that the render shots would be as close to perfect as possible.

There were problems in many of scenes regarding noise. To fix this, I followed the noise workflow found in the Arnold website (Arnold Renderer), and eventually -through trial and error- I got rid of the unwanted noise in the scenes. The process involved testing the various AOVs that I had applied to the scene until I achieved my desired outcome.

Apart from the AOVs, the other component necessary for the optimization for every scene was breaking up each scene into render layers. The primary reason for this was to optimize render resources and money for scenes that had a moving foreground but a still background. In this phase, I segregated all scenes based on foreground, midground and background, while at the same time adding appropriate absolute overrides to the frame range

of the respective render layers. The still frames that were needed for the background were later done locally.

Subscribing to the old-school ways again, I noted each and every single frame range for each render layer and each scene, and I tasked myself with dividing them into batches of work for the render farm and the local machine. Accordingly, I created a folder structure, which would be useful during post-production. After my completing my calculations, the entire movie was composed of 8000 frames that needed to be rendered. The mammoth task of 4K rendering on 8000 frames began, and I felt anxiety for the job ahead.

The Rendering Phase

This phase is the most expensive and time-consuming phase within the entire CGI process. I wanted my film to be completely 4k, which meant that the dimensions of each frame would be 3840 x 2160. To achieve this, an ample amount of render time and powerful machines are required. I had to enlist the help of industrial quality, high-performance render farms. Originally, I had planned to do it through our render farm at RIT; unfortunately, that was taking too much time, and I knew I wouldn't be able to finish my project on time.

I used a cloud-based render farm called *Rendercore,* which is based out of Hollywood, California. After the finishing my render set up, I uploaded my entire project folder to the servers of Rendercore, and I started performing test renders for every scene. I chose two to three frames - the beginning, the middle, and the end in order to get an overall understanding of how the renders were coming out. I put those test renders in Nuke and tested every single AOV. I faced many problems- as the ground wasn't rendering properly in the render farm. This process of troubleshooting took a lot of time and effort; I wasn't able to understand why the ground wasn't rendering. Eventually, I checked the log-view from the Rendercore server, and it said it wasn't able to read textures of my ground. I re-opened the

Maya file, but I wasn't able to figure out where the problem was originating. I tried various solutions: transferring the entire project to a different folder and setting the project at least five times. After a long period of searching, I finally realized that the reason it wasn't working was due to the file path editor- a simple, silly reason. The editor was referencing the wrong path, and thus, it wasn't able to find that particular path for the textures. I ended up re-pathing all of my reference files. Finally, I performed another round of test renders following the same procedure, and the frames came back with the proper ground. I was ecstatic to see the results and was satisfied with them.

After, the test renders were done, I double checked them once more and ensured they were good to go. I re-checked all my scenes and re-uploaded the entire project to the servers. I was finally ready for the final render.

Post-Production Stage

The waiting game began for all of the renders; it took roughly three weeks to finish the entire render, and as soon as each scene completed rendering, the compositing work began. Arranging each scene and color grading commenced as well. I used every diffuse and specular AOVs to grade them and give them a more realistic quality. I used the light AOVs to make the lights a little more dynamic and engaging. The Z depth AOV created a depth of field for every single scene, and I had to animate the focus plane in some of the scenes where rack focus was involved. Keying the live action scenes was a part of this process, so I started compositing individual live action scenes. The compositing software I used was Nuke, as the node based compositing program was ideal for this part of the work phase.

In order to grade all the scenes and keep the color coordination similar, I used the vector scope as a guide to ensure continuity. I did the same for the live action scenes. After

keying, grading the actors to make them look as though they are in the CGI environment was critical. There were many scenes where the foreground, mid-ground, and background were overlapped, but that was an easy fix using the process of rotoscopy to match the scenes exactly.

This process was slightly time-consuming because the render view in Nuke took time due to the 4k display. I managed to render them out as an Apple ProRes 4444 to achieve the highest render quality. These renders would then go in my final After Effects composition, where the playblasts were already integrated into my picture locked timeline.

It was now the time for VFX to begin. I have a subscription for a plug-in in After Effects, called Redgiant, which helps to create effects. Within this plug-in, I used trapcode particular to help me create the smoke effects of the red gas and the blue gas within the scenes. Trapcode particular gives the user control to manipulate the gases and particles they create. I used it to make the smoke and gases travel, as needed, within the scenes. For example, the carbon dioxide and oxygen move from the boy's mouth to the tree and from the tree to the boy. During the budding ceremony, gases travel from the Tree to characters, and this was also done through this trapcode particular. This plug-in helped create the main galaxy scene in the first scene; this was done by manipulating the colors, the particles, and the movements.

The other thing that I needed VFX for was the sky in the background for every scene. I was sceptical of using a royalty free background, but I ended up slipping it in towards the end of the process, and I was able to make it look really nice. I tried multiple VFX techniques- such as trapcode form, which enables the user to create artificial elements in blank space. Unfortunately, I wasn't able to create the effects that I wanted for the

background, and I ended up using a royalty free background of a sun rise for the first half of the movie and a sun set for the second half of the movie.

Sound Design

Sound, as I learned during my time at RIT, is fifty percent of the film. My composer is from Scotland, and he is a very active environment enthusiast- in addition to being a good composer. Due to this reason, I thought he was a great fit for this film. The music that I had in the film needed to be very symbolic. The background score that I wanted had to have elements that could evoke moods of happiness and joy, as well as sadness and disappointment. The way I wanted it to work was having the same undertone in the score that could be manipulated to change emotions to fit in with my desired effect. I expressed these requirements to my composer, and we went back and forth with various versions. Eventually, we came to mutual understanding. After the picture locked version was shared with him, he started embedding sound effects and ambiences into the scenes. For example, he added sounds to mimic the chopping, the jumping, and the ambience. I wanted a couple of ambient drones and movement sounds for the big camera moves as well: the zoom out from the tree, the zoom in to the tree, and the big pans within the tree. I wanted this movie to be in a 5.1 surround sound. The way I envisioned it, it would have various sound FX of ambience, including birds chirping all around the room. The workflow for the sound began focused on the stereo then shifted to 5 different channels. Unfortunately, the sound card that my composer was using started to fail, which disallowed the export to 6 different channels from the DAW (Digital Audio Work Station) that he was working with. Therefore, we decided to keep the final sound in stereo.

Another main area for the focus for sound entailed composing lyrics for a theme melody within the film. I wrote a chorus that could be played throughout the film and that

could resonate a particular emotion depending on how it was played. However, after working on several iterations I decided to just use the lyrics, "*Let me be there.*" These lyrics were all I needed, as they could be used with both happiness and sadness. I used it in the beginning to symbolize happiness and towards the end to symbolize that no matter what happens the trees will always be there for us keeping us alive. My composer really liked this idea, and he embedded these lyrics during the main emotional points of the film: the child getting oxygen from the tree, the bud blooming in the first ceremony, and the ending when the flower realises that the man is chopping down the tree.

Audience Feedback

The Audience feedback was very engaging, and discussion lasted much more than the duration of the movie. Most of them centered around the idea of combining live action and animation and a few felt that there were areas for improvement around focus on characters, their interactions and their impact on the audience. A few talked about mixing several styles together all in one pack. One member from the audience pointed out that the ending had two-dimensional message, one on pollution and the other on cutting trees, and felt that it could have been just one. Another viewer pointed out that the live action characters did not engage much with the tree characters which were cartoonish in nature for a profound theme. The idea was noble but there were a lot of styles and approaches that was bundled in a short movie. Independent audience presentations, especially the people who worked on parts of the movie felt that they were touched, and a few had tears in their eyes. Appreciation centered around the expression of characters, story, visual effects and music. The music director's daughter, who also made the vocals, wanted to have the leaf characters as cushions in her living room to remind her of the need for rising up for the call of "I am Arbor".

Conclusion

The journey of making this movie was filled with thrills, hard work, suspense, and frustrations. While I started out feeling like a fish suddenly thrown into the ocean, I gained a deep understanding.

At the conceptual stage of my discussion with my thesis committee, I knew I was getting into a project that had the potential to overwhelm me. However, I took the plunge, realizing very little of what could go wrong at each stage of the movie making life cycle- from concept design to pre-production to final production and completion.

At times, I felt encouraged and ecstatic at the smooth rides, but there were several junctures I ended up in a complex maze of choices. However, I came out of this process with a deep sense of understanding on how to be an independent film maker, how to navigate through moments of distress, how to manage people, and most importantly how to encounter uncertainties.

With a bias towards precision and maniacal focus on quality and workmanship, I experienced the joy of creation, the joy of making friendships, and the joy of feeling a sense of fulfillment in my ability to apply all my learnings from the Graduate Program.

In summary I can only say, that this non-credit part of my curriculum, deserves special mention. Due to the nature of the project, I learned much about the process, and overall, it was a true test of my problem-solving skills. I am proud to use the armory of academic learnings I gained throughout this process to be successful in the future. One of the key rewards I got in this project came from my mother, who became emotional- with tears rolling down her cheeks- when viewing the final product. She jumped up from the sofa and hugged me as she saw her dream come alive through her son's thesis project. I got my prize: her blessings.

I hope my project will hold a promise for the future and inspire others, especially students who believe in jumping in on a project they are passionate about and creating and shaping their dreams through a movie filled with material and managerial complexities. I lived all those moments, and I thank my professors, mentors, teachers, partners, and colleagues who made this possible for me. "*Let me be there*!"

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Silverstein, Shel. *The Giving Tree*. Harper Collins, 1992.

Appendix

First Cut of Storyboards
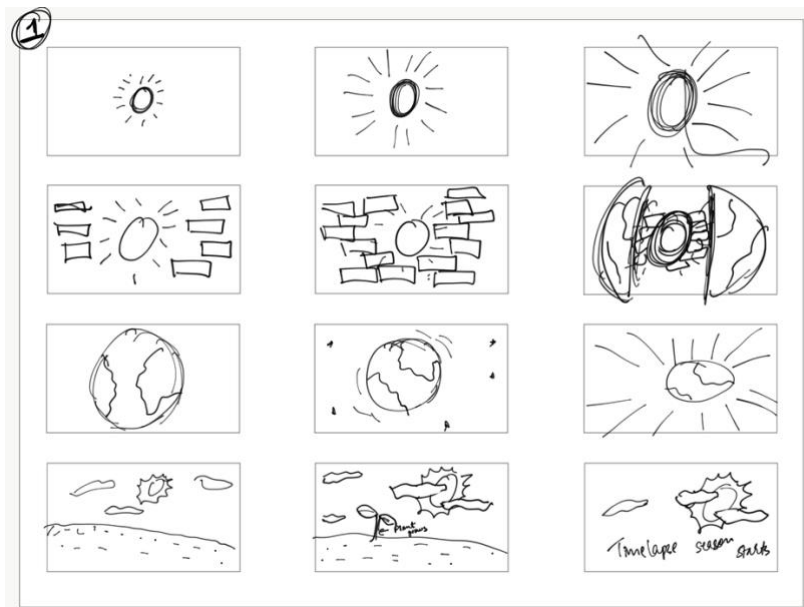
Figure 1 The formation of the world and our dear old earth.

Twigs swaying
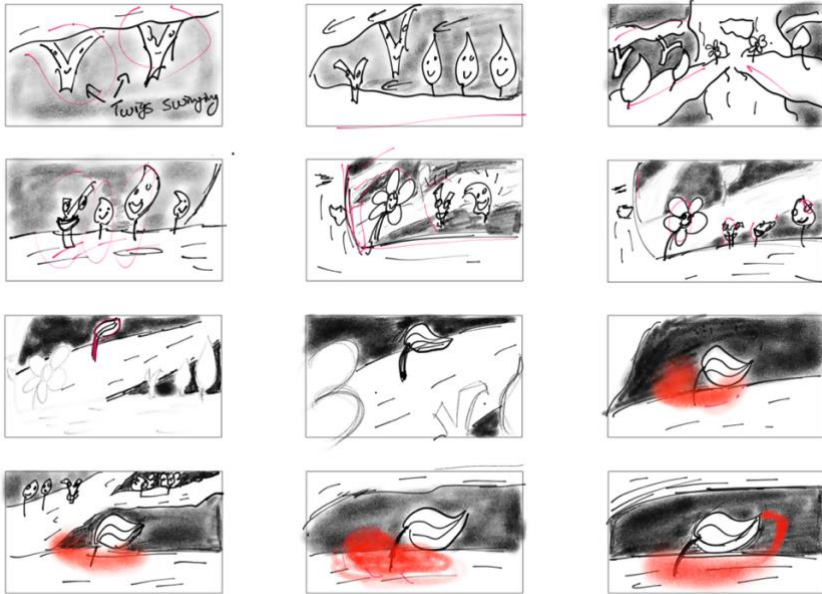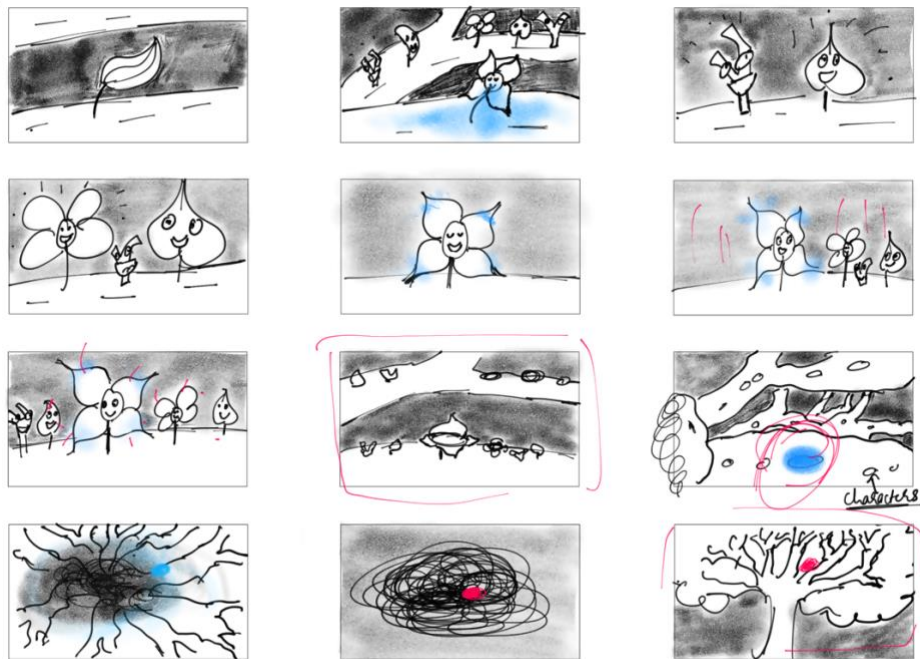
Timelapse of
weather begins

Timelapse keeps
happening w/ the
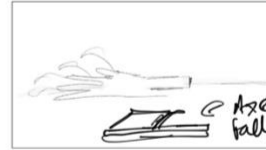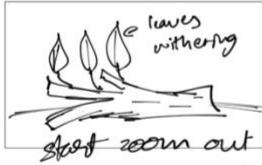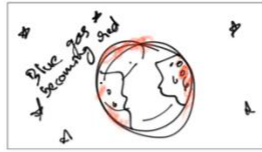weather change &
slowly zooms out.

Timelapse
ends.

Fade to
Black

Blue sky becoming red

overall red guy

zoom in

sound tree cut

leaves withering

start zoom out

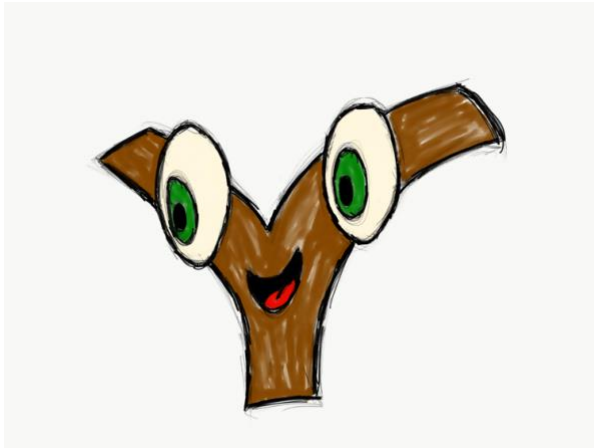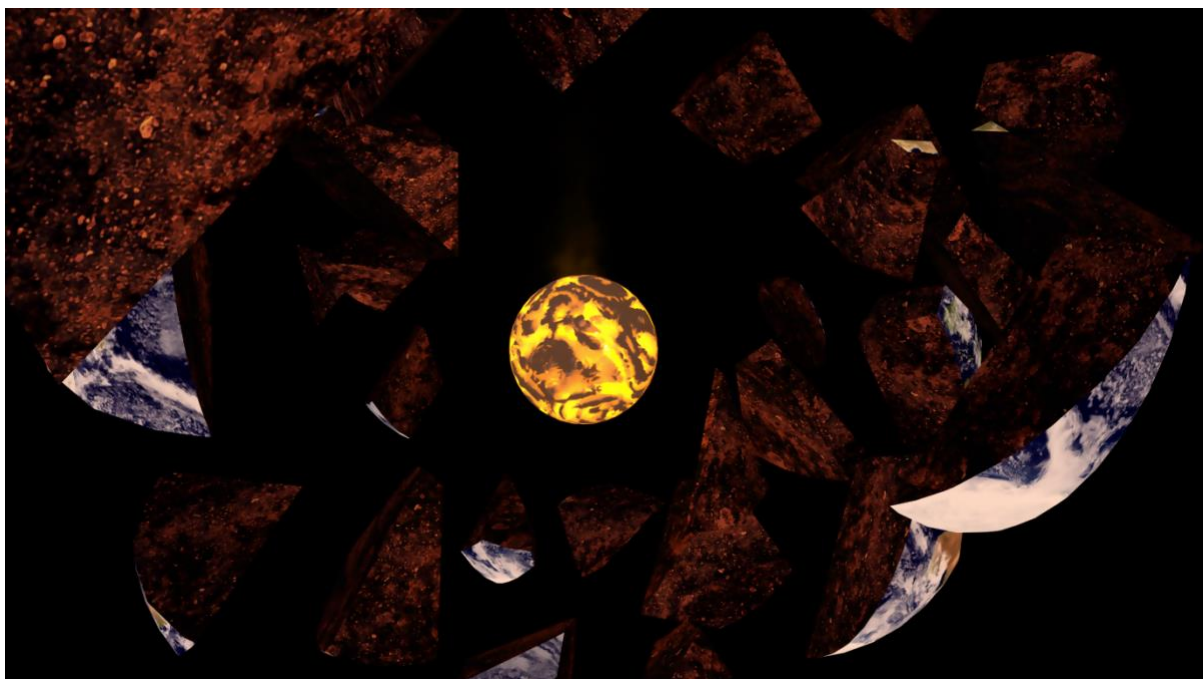Start becoming blur

@ Axe falls
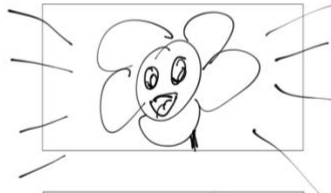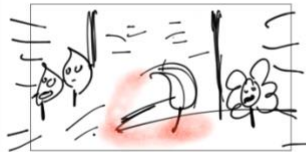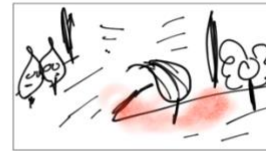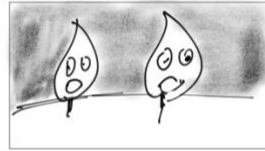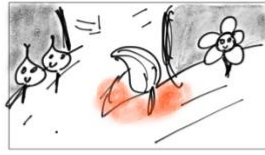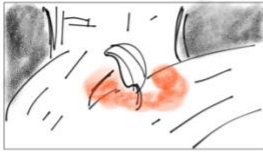
Character Designs

Screenshots

I AM ARBOR

Submitted in partial fulfillment of the
requirements for the MFA degree in the
School of Film and Animation,
Rochester Institute of Technology

LIVE ACTION

Diretor of Photography	Manojh Reddy
1st AC	Bo Gao
2nd AC	Dan Mullen
Key Grip	Ricky Panipinto
Gaffer	Olivia Carson
Casting Director	Matthew Hoye
Sound Recorder	Brian Hewitt
Visual Effects Supervisor	Oscar Estrado
BTS Videographer	Mohammed Alshammary
BTS Photographer	Kate Potvin
Key Make-up Artist	Jhade Benitez

Behind the Scenes