ANIM7005: PROFESSIONAL PROJECT
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COCO LOCO

BRIEF & INTRODUCTION

This paper consists of an in-depth retrospective which aims to evaluate, reflect and discuss aspects of performance of pre-production, production and post-production of "Coco Loco." The project brief, consisted of an open-ended task to which students could choose to individually or collectively concept, direct and execute an animation project which demonstrates superb production quality and showcases a culmination of skills. The scope of the project and which skills to explore were up to the student, with the only restriction imposed upon the task was that the duration of the short could not exceed 3 minutes.

The first decision required to be made in order to start the project was to whether approach it individually or as a group. Without question, as wisely said by Andrew Stanton, Pixar director and writer, "making movies is a team sport." Yet, rarely will the opportunity of having full creative control over a project present itself. Having worked on a group project on the previous assignment, I reached the decision of working individually and tell my creative story the way I envisioned. It was also an opportunity to explore different ranges of skills and expand my knowledge set. Nonetheless, I counted with help from project tutor Amedeo Beretta in giving me constant feedback and Michael Davies who kindly taught me how to rig my characters.

In addition, I opted to make a cartoony style animation and to fully rig and model to expand my creative freedom and control over the project choices. My objective in executing this short can be broken down into learning goals and product goals. As my long-term goal is to be an animation director, I find it particularly important to me to have some understanding of how all aspects of production work, without limiting myself to just animation. That includes cameras, cinematography, lighting, texturing, rendering, concept art, script writing and of course, animation. Those are skills that I wanted to explore, especially rigging, since I always saw the lack of knowledge as a barrier to executing some of my ideas. In terms of what I wanted to achieve with the product outcome, was a stylized dark humour comedy with a twist. I wanted it to have an underlying meaning of how you can't escape fate, and how sometimes ignorance is a threat to our own survival. The idea to explore coconuts as main characters, came from my personal experience of having grown up by the beach in Brazil, constantly drinking coconut water. I wanted to bring something personal to this project, something that relates to my cultural background and that looked different from what is out there – and there are not animations about coconuts or coconuts character rigs, which is an added benefit as people wouldn't immediately associate it with another well-known character.

THE ANIMATION INDUSTRY: A CONCISE OVERVIEW

The animation industry is growing at a rate of 2-3% a year, with 3D Animation and VFX being the largest growing segments (Research and Markets, 2020). Due to technological advancements, which made animation more accessible to the masses, there is a higher demand for animated content, and consequently the industry is one of the fastest growing in the global entertainment market. In addition, animation is consumed in a variety of platforms, including Netflix, Amazon, Hulu, YouTube, Twitter and Facebook, and therefore users spend more time accessing this digital content (Research and Markets, 2020). The fact that there is a variety of mediums to consume animation presents itself as an opportunity for first time filmmakers that would like to share their stories online and hopefully gain some visibility. Streaming animation market is growing at a faster

rate than the industry itself, at a remarkable annual rate of 8% (Research and Markets, 2020). While European studios have achieved global success with television productions, the movie animation market is dominated by major American studios (Research and Markets Europe, 2020) which poses a problem to the British as "since the 1920s, animators have struggled to compete with the American studios" (Stewart, 2018). A major reason for the struggle to compete is financial, as the UK struggles to get financing for projects and when it does, it barely compares with Hollywood. Yet, with recent tax incentives and new studios– as for example, the new DNEG Feature Animation division (DNEG, n.d.) - UK's animation might be entering a new golden age (Briggs, 2019). This presents itself as an opportunity and knowing that 3D animation is one of the largest growing segments, it seems wise to invest in such practice. Coco Loco intends to follow the 3D Animation style of American studios as Pixar, without the photorealistic CGI. The goal was to make something that looked stylized but that could still exist in the 3D world and be high quality. I find the UK to be more limited on the amount of 3D cartoony Animations that its outputs as compared to realistic animation, and I find that to be an opportunity in a local market that is not yet saturated like Hollywood.

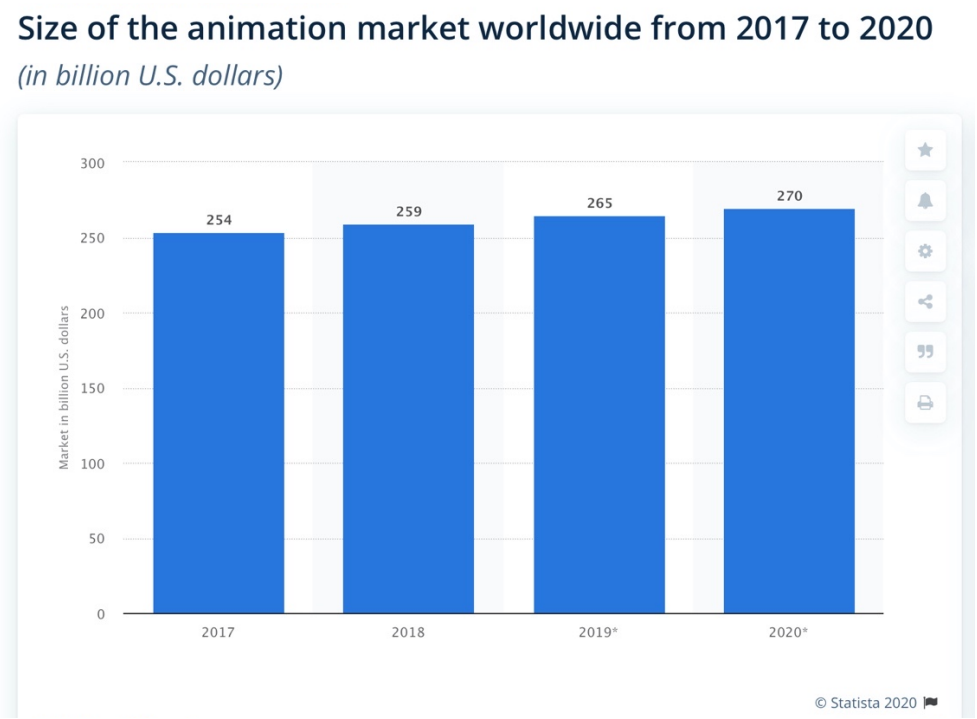


Figure 1: Graph by Statista shows growth in the animation industry

PROJECT TIMETABLE

In order to optimise the pipeline and effectively make use of the time given, I created early on an excel sheet, breaking down each task I had to do and how long I estimated it would take me to complete each of them. The timetable was revised by the Amedeo, to ensure I was doing reasonable workload predictions. Evidently, as time went by, I had to make adjustments and reorganise the tasks at the table to make it accurate to the situation of the project as some tasks, as rigging, ended up taking longer than expected.

	PLAN FOR PROJECT		
DATE	MISSION	STATUS REPORT	Productive Time Spent
STAGE 1	PRE PRODUCTION		
28/10/2019	Proposal + Plan: Tentative Production Plan + BeatList with Sub Ideas + Rig Plan + Style References		
29/10/2019	Script Writing + Sketching + Pinterest References		
30/10/2019	Script Writing (making adjustments) + Sketching + List of items		
31/10/2019	Storyboard Begin + Sketching + List of items		
1/11/2019	Storyboard + Sketching + Pinterest References		
2/11/2019	WEEKEND - Anniversary Celebration - out of UK		
3/11/2019	WEEKEND - Anniversary Celebration - out of UK		
4/11/2019	Storyboard + Sketching + Pinterest References		
5/11/2019	Storyboard + Sketching + Research/References (eg: something has to be done different to use unreal? do we need effects? how?)		
6/11/2019	Storyboard/Animatic + Sketching + Research/References, search sound as well		
7/11/2019	Storyboard/Animatic, make an edit		
8/11/2019	Storyboard/Animatic , include sound		
9/11/2019	WEEKEND - Finland - out of UK - if possible, work on storyboard/Animatic		
10/11/2019	WEEKEND - Finland - out of UK - if possible, work on a plan for modelling and rigging		
11/11/2019	Final Animatic, include sound		
12/11/2019	modelling for previs		
STAGE 2	PRODUCTION		
13/11/2019	Modelling for previs		
14/11/2019	Modelling for previs		
15/11/2019	previs		
16/11/2019	WEEKEND - out of UK		
17/11/2019	WEEKEND - out of UK -		
18/11/2019	previs		
19/11/2019	Previs		
20/11/2019	Previs		
21/11/2019	Modelling		
22/11/2019	Modelling		
23/11/2019	WEEKEND - Modelling		
24/11/2019	WEEKEND - Modelling		
25/11/2019	Modelling Environment		
26/11/2019	Modelling Environment		
27/11/2019	Modelling Environment		
28/11/2019	Modelling Environment		
29/11/2019	Modelling Environment		
30/11/2019	WEEKEND - Modelling Character		
1/12/2019	WEEKEND - Modelling Character		
2/12/2019	modelling character		
3/12/2019	modelling character		
4/12/2019	modelling character		
5/12/2019	modelling character		
6/12/2019	modelling character		
7/12/2019	WEEKEND - modelling		
8/12/2019	WEEKEND - modelling		
9/12/2019	modelling character		
10/12/2019	Rigging		
11/12/2019	Rigging		
12/12/2019	Rigging		
13/12/2019	Rigging		
14/12/2019	WEEKEND		
15/12/2019	WEEKEND - Going to Rio		
16/12/2019	rigging		
17/12/2019	ANIMATION PREVIS		
18/12/2019	ANIMATION PREVIS		
19/12/2019	ANIMATION PREVIS		
20/12/2019	ANIMATION PREVIS		
21/12/2019	WEEKEND		
22/12/2019	WEEKEND		
23/12/2019	CHRISTMAS BREAK - please work on animation during break		
24/12/2019	CHRISTMAS BREAK		
25/12/2019	CHRISTMAS BREAK		
26/12/2019	CHRISTMAS BREAK		
27/12/2019	CHRISTMAS BREAK		
28/12/2019	CHRISTMAS BREAK		
29/12/2019	CHRISTMAS BREAK		
30/12/2019	CHRISTMAS BREAK		
31/12/2019	CHRISTMAS BREAK		
1/1/2020	CHRISTMAS BREAK		
2/1/2020	CHRISTMAS BREAK		
3/1/2020	CHRISTMAS BREAK		
4/1/2020	CHRISTMAS BREAK		
5/1/2020	CHRISTMAS BREAK		
6/1/2020	Rigging and Animation		
7/1/2020	Animation (please specify the scene)		
8/1/2020	Animation (please specify the scene)		
9/1/2020	Animation (please specify the scene)		
10/1/2020	Animation (please specify the scene)	RENDER TEST OF 1 SHOT -ideally the shot with hand, dust on the coconut	
11/1/2020	WEEKEND - please work on animation		
12/1/2020	WEEKEND - please work on animation		
13/1/2020	Animation (please specify the scene) + rendering and lightining		
14/1/2020	Animation (please specify the scene) + rendering and lightining		
15/1/2020	Animation (please specify the scene)+ rendering and lightining	SLAP COMP	
16/1/2020	Animation (please specify the scene)+ rendering and lightining		
17/1/2020	Animation (please specify the scene)+ rendering and lightining	blocking done	
18/1/2020	WEEKEND - please work on animation		
19/1/2020	WEEKEND - please work on animation		
20/1/2020	Animation (please specify the scene)+ rendering and lightining		
21/1/2020	Animation (please specify the scene)+ rendering and lightining		
22/1/2020	Animation (please specify the scene)+ rendering and lightining		
23/1/2020	Animation (please specify the scene)+ rendering and lightining		
24/1/2020	Animation (please specify the scene)+ rendering and lightining	80% splined animation	
25/1/2020	WEEKEND		
26/1/2020	WEEKEND		
27/1/2020	Animation (please specify the scene)-+ rendering and lightining		
28/1/2020	Animation (please specify the scene)+ rendering and lightining		
STAGE 3	POST - PRODUCTION		
29/1/2020	Lighting + Test Renders + compositing		
30/1/2020	Lighting + Test Renders + compositing		
31/1/2020	Lighting + Test Renders + compositing	2d3d fx lookdev	
1/2/2020	WEEKEND		
2/2/2020	WEEKEND		
3/2/2020	Rendering + compositing		
4/2/2020	Rendering + compositing		
5/2/2020	Rendering + compositing		
6/2/2020	Rendering + compositing		
7/2/2020	Rendering + compositing	2dfx	
8/2/2020	WEEKEND - Rendering		
9/2/2020	WEEKEND - Rendering		
10/2/2020	Rendering + compositing		
11/2/2020	Rendering + compositing		
12/2/2020	Rendering + Effects + Editing		
13/2/2020	Rendering + Effects + Editing		
14/2/2020	Editing	3d fx	
15/2/2020	WEEKEND - Rendering / START ESSAY HERE!		
16/2/2020	WEEKEND - Rendering / START ESSAY HERE!		
17/2/2020	Editing + Final Renders		
18/2/2020	Editing + Final Renders		
19/2/2020	Editing + Final Renders+ Writing Essay		
20/2/2020	Writing Essay		
21/2/2020	Writing Essay		
22/2/2020	WEEKEND - use it for any changes. Wether Essay or renders or edit		
23/2/2020	WEEKEND - use it for any changes. Wether Essay or renders or edit		
24/2/2020	DEADLINE		

Figure 2: Initial full tentative timetable.

STAGE 3	POST - PRODUCTION		
29/1/2020	Animating + test renders		
30/1/2020	Animating + test renders		
31/1/2020	FINISH FIRST PASSES and have a new edit (WORK ON SOUND)	2d3d fx lookdev	
1/2/2020	WEEKEND + animation (address notes and improve) - launch render		
2/2/2020	WEEKEND + animation (address notes and improve) - launch render	HAVE A NEW EDIT	
3/2/2020	Animating/ correcting + test renders - SECOND PASS	SH 0100	
4/2/2020	Animating + test renders- SECOND PASS	SH 0200 + 0300	
5/2/2020	Animating + test renders- SECOND PASS	SH 0350 + 0400	
6/2/2020	Animating + test renders - SECOND PASS	SH 0500	
7/2/2020	Animating + test renders - SECOND PASS	2dfx + work on needed shots	
8/2/2020	WEEKEND - Rendering and Animating		
9/2/2020	WEEKEND - Rendering and Animating		
10/2/2020	ANIMATION THIRD PASS - all shots + editing + effects		
11/2/2020	ANIMATION THIRD PASS - all shots + editing + effects		
12/2/2020	ANIMATION THIRD PASS - all shots + editing + effects		
13/2/2020	ANIMATION THIRD PASS - all shots + editing + effects		
14/2/2020	ANIMATION THIRD PASS - all shots + editing + effects	3d fx	
15/2/2020	WEEKEND - Rendering / START ESSAY HERE!		
16/2/2020	WEEKEND - Rendering / START ESSAY HERE!		
17/2/2020	Editing + Final Renders + FIX LIGHTS		
18/2/2020	Editing + Final Renders WRITE ESSAY		
19/2/2020	Editing + Final Renders+ Writing Essay - WORK ON 2D SAND EFFECT	HAVE AN EDIT AND INCLUDE SOUND.	
20/2/2020	Writing Essay + EDITING + RENDER - WORK ON 2D SAND EFFECT		
21/2/2020	EDIT + RENDER + WORK ON EFFECT - HAVE A NEARLY FINAL EDIT		
22/2/2020	WEEKEND - use it for any changes. Wether Essay or renders or edit		
23/2/2020	WEEKEND - use it for any changes. Wether Essay or renders or edit		
24/2/2020	DEADLINE		

Figure 3: Iteration of timetable for last month of project.

Further down production, as I started doing test renders, I also created an Excel sheet to track and calculate rendering times.

SHOT number	RENDER TIME P/FRAME secs	Start Frame	End Frame	Number of frames	RENDER TIME TOTAL (seconds)	RENDER TIME TOTAL (hours)
SH 0100	63	1001	1619	618	38934	10.815
SH 0200	17	1001	1130	129	2193	0.6091666667
SH 0300	20	1001	1130	129	2580	0.7166666667
SH 0350	14	1001	1063	62	868	0.2411111111
SH 0355	10	1	250	249	2490	0.6916666667
SH 0400	13	1001	1093	92	1196	0.3322222222
SH 0500	273	1001	1619	618	168714	46.865
SH 0600	152	1001	1162	161	24472	6.797777778
					TOTAL RENDER TIME IN HOURS	67.06861111
					TOTAL RENDER TIME IN DAYS	2.794525463
					DIVIDED BY THREE MACHINES	22.3562037
					(three machines is the least)	

Figure 4: Excel calculations of render times.

PRE-PRODUCTION

Initial Concepts:

The initial phase of the project consisted of concepting ideas and storylines for potential short movies. The process for coming up with ideas varied – for some of them, I tried to think of situations or feelings that were easy to empathise with, as for example, stories about love and family. Others occur naturally to me, either as a dream or as a thought. Regardless of how I ended up with each idea, I developed them further as part of my creative process.

After developing the ideas and sketching some of them out to get a visual representation of what it could look like, I narrowed it down to 17 concepts that I believed had potential.

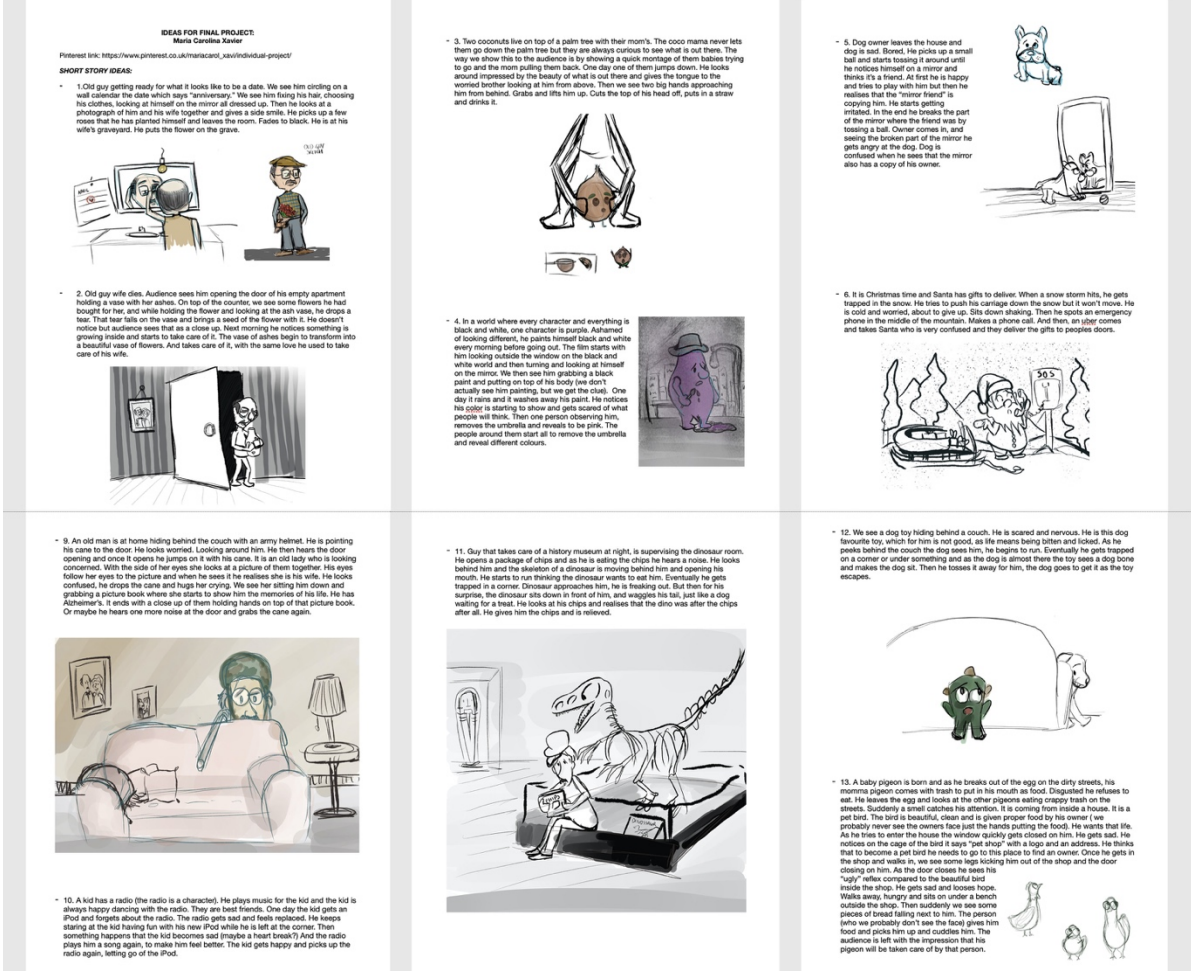


Figure 5: Initial 17 ideas with sketches.

Selecting and Committing to a Story Concept:

After narrowing ideas down to 17, I sent it to Amedeo, to obtain his opinion and feedback. The feedback addressed both production challenges and quality of story, which was extremely beneficial to help me evaluate them more objectively.

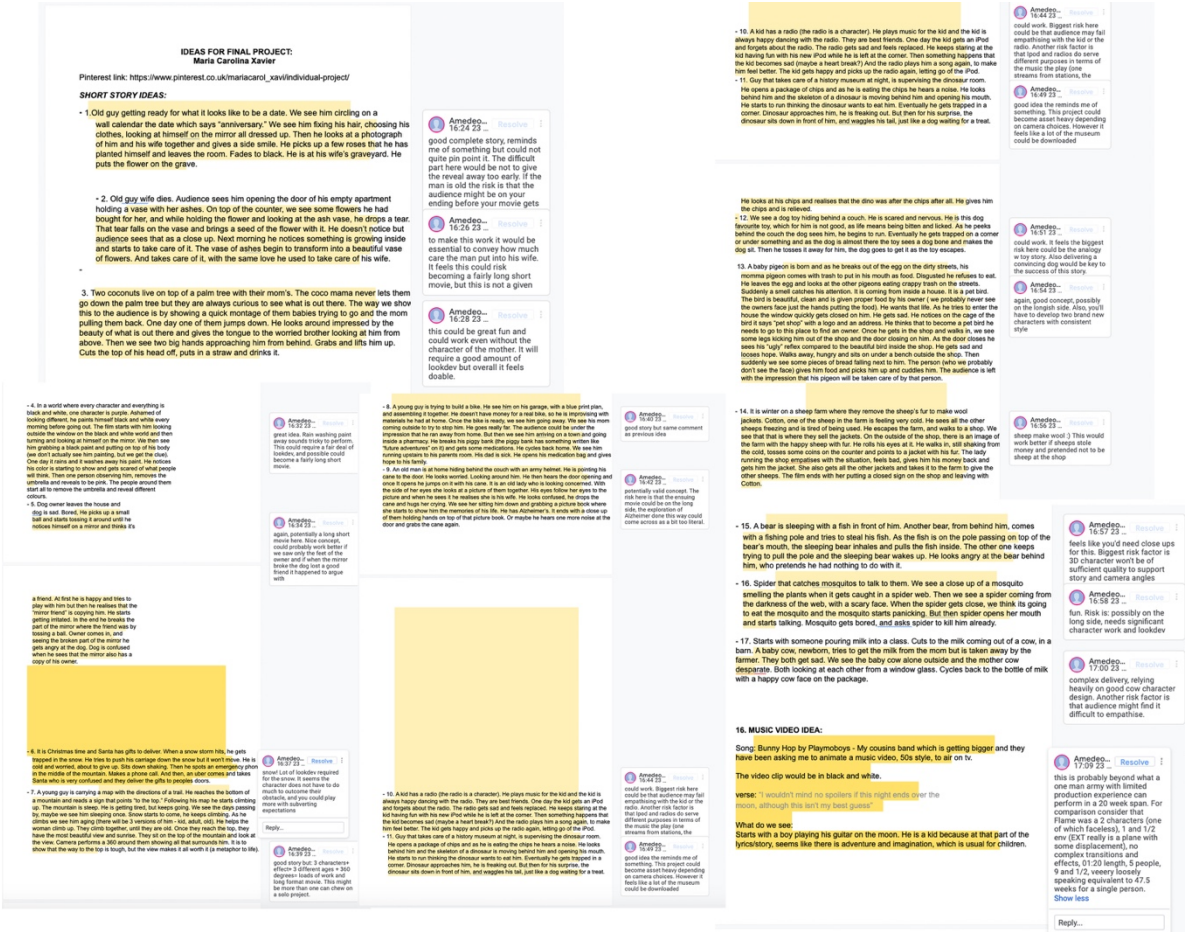


Figure 6: Ideas sent out for initial feedback via Google drive.

Once I received Amedeo's comments, I evaluated my options. The first thing was to eliminate ideas of movies that would fit within the time constraints. Those would have required a group of people and even so, potentially more time which I did not have at my disposal. I than answered two proposed questions by Mr. Beretta:

1. What story did I prefer? Why? What opportunity would the story give me?
2. How long did I want this project to be?

After critically thinking about the questions above and further narrowing down my pool of concepts, I pitched my final favourite ideas to friends and family. Even though the final decision of which story to pursue was mine, I always see value in getting more feedback to see how people react to my ideas.

Following careful consideration, I decided to execute "Coco Loco." It felt like a complete story with beginning, middle and end, that would be doable to execute within the proposed time without sacrificing quality and very importantly, it was linked to my Brazilian cultural background. I felt very connected and engaged in the story and therefore I knew it was the right story to tell. In addition, it was very conceptual, and it would give me the opportunity to present the audience with something they don't see every day. Coco Loco offers a change in perspective. I grew up drinking coconut water at the beach in Brazil, and it occurred to me that I could tell the story about how those characters deal with the unknown yet undeniable fate of what happens after they fall out of a tree.

STORY DEVELOPMENT & INITIAL SKETCHES

The idea was re-worked a few times until I reached the story I wanted to tell. Initially, I wanted the coconuts to act more human. The initial concept consisted of two coconuts, Joca and Gui, living together in their mom's house on top of a palm tree. The mom would never let them go down the palm tree in order to protect them from the dangers of the human world. Then one day, one of them would jump down and be surprised by the horrifying fate that awaited when a guy picks him up to drink his water. At that initial stage, the coconuts had human legs, arms and were capable of running to save themselves.

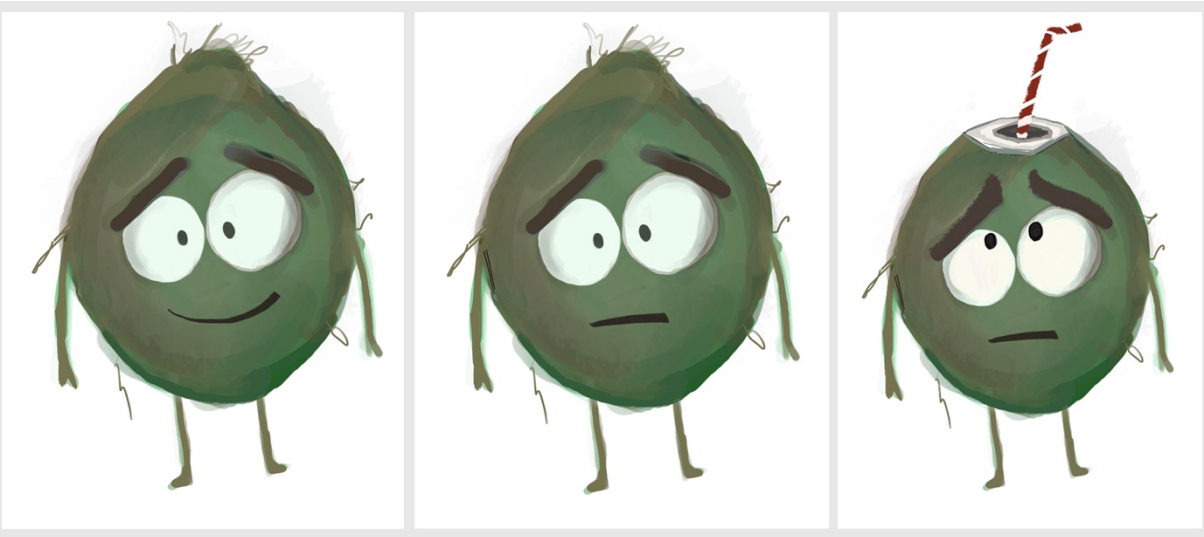


Figure 7:Initial coconut concept idea that included arms and legs.

Following discussions with Amedeo and peers, I decided that the coconuts should look like actual coconuts and have some of the fruit's limitations: ex: no legs and be stuck to the palm tree. The reason behind that decision was to make the story stronger by adding a physical limitation that the character had to overcome. Making initial sketches of the characters helped me develop the story as it served as a visual aid and helped me think of what kind of challenges this character may encounter. In addition, it could simplify rigging and allow more time for me to work on the character's facial expressions.

In order to properly develop and write the script of the story, I researched methods of storytelling and came across a superb class from Pixar in a Box: a partnership of Pixar with Khan Academy where they give various lessons on various animation subjects. The story class was taught by Pixar employees: Derek Thompson, story artist, Mary Coleman, head of creative development, Kevin O'Brien, story artist and Robert Grahamiones, editor. They gave many valuable advices as to create a beat list to show the most important moments in the story – what is happening, not how (Mary Coleman, n.d.).

BEATLIST
Three coconuts sleep/rest on top of palm tree.
One of them falls.
Gui gets excited about falling too, he wants to see what is out there. Joca is terrified to fall as well.
Gui manages to pull himself down.
Gui gets picked up by a human.
Joca observes.
Human cleans the sand of Gui.
Joca observes.
Human chops off Gui's head.
Joca yells.
Gui yells.
Joca faints.
Human puts a straw on Gui's head.
Human drinks coconut water / Gui Faints.
Joca wakes up from fainting.
Joca falls from the tree.
Gui wakes up happy to be where he is - it was all a nightmare.

Figure 8:Story beat list.

In addition, the artists explained how to come up with a theme, something that connects the whole story and is the moral lesson of the story, as for example, in Cars it's that there is more to life than just winning. They stressed that the film must have a core idea in order to be memorable. In the case of Coco Loco, the core idea is that the you should accept the place you're at without rushing fate. Another valuable point they made is that from the beginning you need to know what is your character's goal, as in what is it that your protagonist wants and that this won't be necessarily what they need – which might be a realization that they come to at the end (Mary Coleman, n.d.). Coco Loco's protagonist, Gui, has the goal to experience freedom and find happiness away from the palm tree, where he is stuck at.

Finally, a very important lesson is that you should break the story into three acts. Act I should be where the audience meets your character and finds out when and where the story takes place. It should also set the tone to the kind of movie. As Mary Coleman summarised: "What's essential in the first act is that you meet the main character in his world, and you understand their place in the world and you understand their problem in the world." As the viewer is learning about the world on act I, he should be presented with an "inciting incident," which is something that breaks the routine, a "key obstacle." That obstacle can be what will launch the character into the journey of the film (Mary Coleman, n.d.). In the case of Coco Loco, the inciting incident is Pepe, the older coconut, falling from the tree, making Gui realise he wants to go as well, although he has a physical barrier of being attached to the tree.

Then you have act two, where your character is trying to achieve their goals and encounter a series of complications, for example, Gui trying to detach from the tree and after falling, having no way to escape his destiny in the hands of the human figure who chops his head. Coleman mentioned that "you have to keep making things harder for your character, or the story has no conflict, and a story with no conflict has no shape, no pacing, no momentum, so you just keep throwing harder and harder things their way and they have to learn." That is the reason why I made the emotional progression from the first contact with the human being something perceived as positive and quickly turning into a exponentially dangerous experience. Finally, on Act III your character should go through the climax where he almost loses everything, to then return to a calmer place. This happens when Gui can no longer take it and faints as the human drinks his water, only to then wake up from a nightmare. During those acts, the character goes through what they called an "emotional arc" and that makes the story resolved (Mary Coleman, n.d.).

The reason why Coco Loco's story resolution is left for after the credits, is to challenge the audience's belief that the story must end well, and for a second let them think that it might not,

because the reality is that in life, there are consequences to our choices and we can't always undo them. As Brad Bird, Nemo's director said at an Animation Bafta Session: "there is a lot of conditioning in animation that nobody is ever in danger, nobody can get hurt, nobody can ever die. (Bird, 2019)." It also has the intention to make the audience to feel the "relief" of waking up together with Gui.

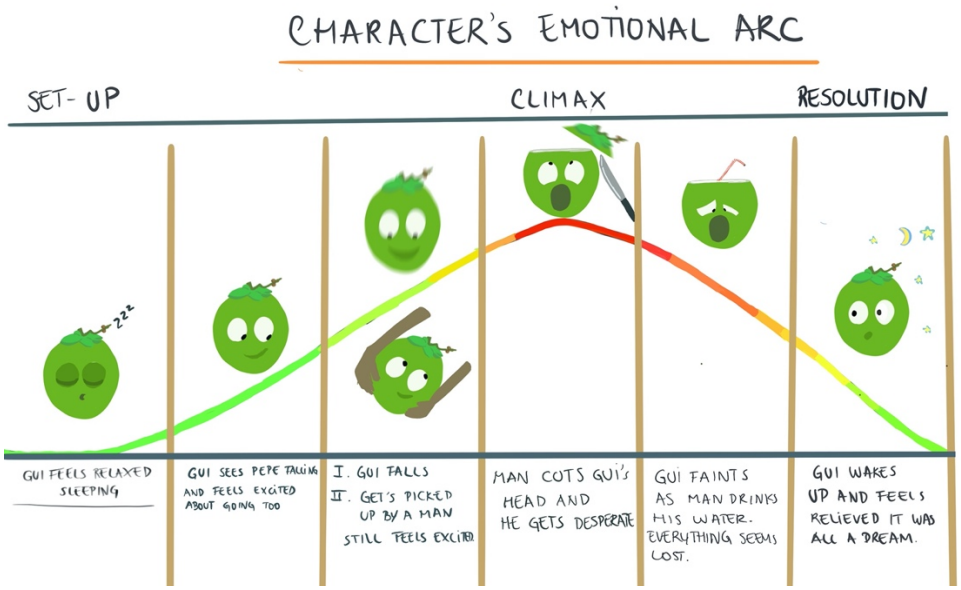


Figure 9: Protagonist (Gui) emotional arc, based on ProWritingAid website.

STORYBOARDING, ANIMATIC & PREVIS

While developing the story and writing the script, I also worked on the storyboard. I used a website called Boords to set it up, and the individual drawings were done on ProCreate on the iPad.

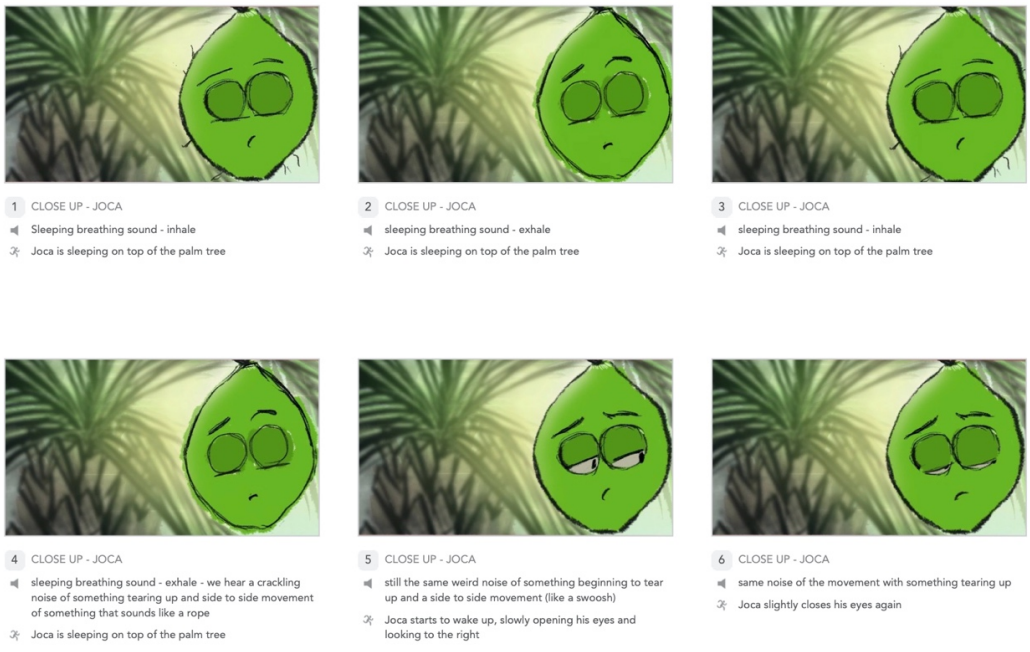


Figure 10: Section of initial storyboard.

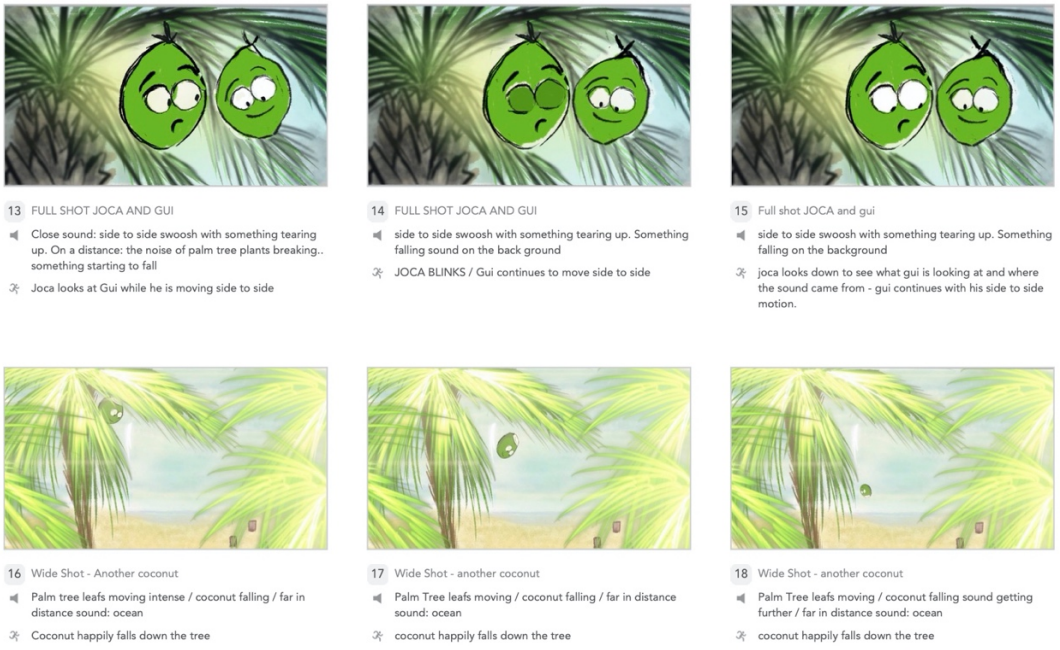


Figure 11: Section of initial storyboard 2

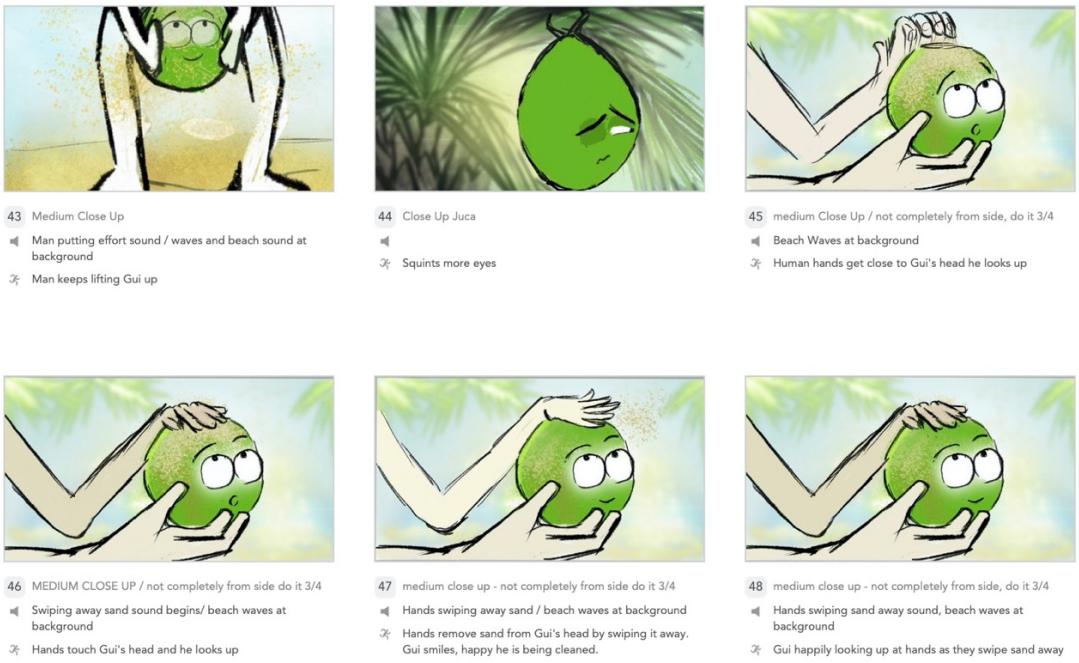


Figure 12: Section of initial storyboard 3

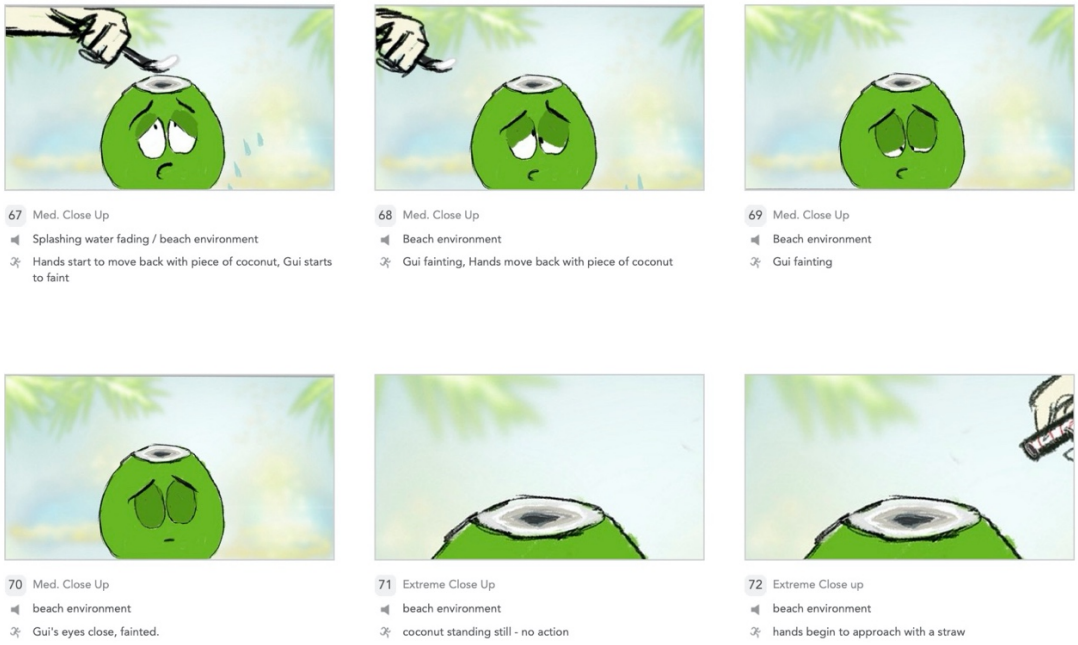
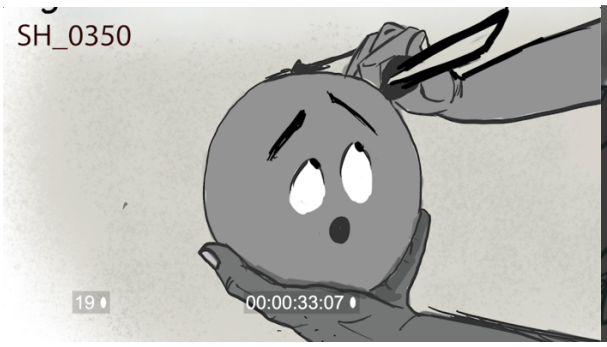
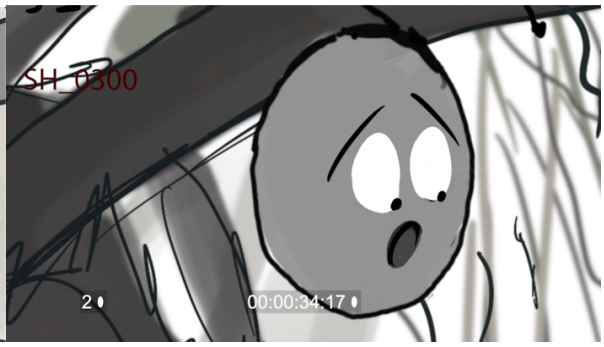


Figure 13: Section of initial storyboard 4

After a few storyboard iterations, I moved onto the Animatic. At this stage, I produced a 2D digitally drawn version of the film, where I could explore timing, basic poses, editing and the general flow of the story. Similar to the storyboard, there were a few iterations of the animatic; this happens specially because it is easier to explore ideas and make changes at this stage when its rough than in 3D. The animatic allows me to anticipate the challenges I am going to face, as for example, having to animate sand, having to deform the straw and what type of camera movement I am expected to have, and also identify opportunities within the story.


SH_0350
19
00:00:33:07


SH_0300
2
00:00:34:17


SH_0350
25
00:00:36:19


5-6
SH_0500
9
00:00:38:00


SH_0350
8
00:00:38:14


5-9
SH_0500
16


SH_0350
6
00:00:41:14

Figure 14: Sections of animatic

For SH 0350 in the animatic, the scene where Gui gets his head chopped off, I had to record reference to study the movement and timing of the action. Using a watermelon instead of a coconut, I filmed the action and then broke it down into the most important poses.

Figure 15: Using a Watermelon to record reference of head getting chopped for animatic.

Following the Animatic, I started to work on previs which "is the process of imagining and planning a final product […] to quickly create an idea of what cameras, performances, effects, stunts, etc may be needed […]" (Herr, 2018). Essentially, my process consisted of making a very basic rig and model of the environment and coconut characters, and animating it based on the animatic while improving it. In addition, it helped me decide where to place the cameras for each shot.

Figure 16: Previs shot 0200: coconut on the beach.

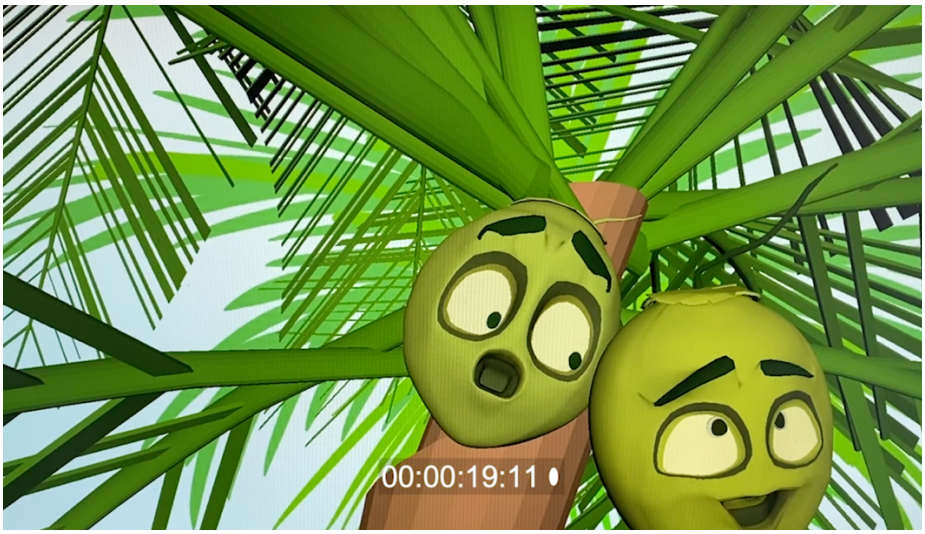


Figure 17:Previs shot 0100: Gui falling from palm tree

Starting the editing process early on from the animatic stage and keep updating it throughout the project brings major benefits as it allows me to keep track of the story and test it as I go. As the Japanese movie director Kurosawa said back then: “If I didn’t edit as I go, […] my crew would lose track of what they are doing with multiple cameras” (Bock, 1981). Editing throughout is essential for organization and to ensure everything is coming across as intended, both in terms of message as flow in between shots.

STORY STYLE & VISUAL CONCEPTS

From the beginning I knew I wanted to make a stylized 3D animation. The style research process started with making a mood-board at Pinterest, where I pinned artwork from different artists to give me inspiration and ideas of possible directions. In addition, I watched animations that seemed relevant for style I was aiming for, as Moana, Lilo Stitch, Q Pootle 5 and Lynx & Birds. Moana helped me see how they set up outdoors beach scenes and how they lit it. Lilo Stich was also a good reference because it helped me see how I could paint part of the scene in 2D to not have to build it in 3D, which would allow for a more stylized look and less render time.

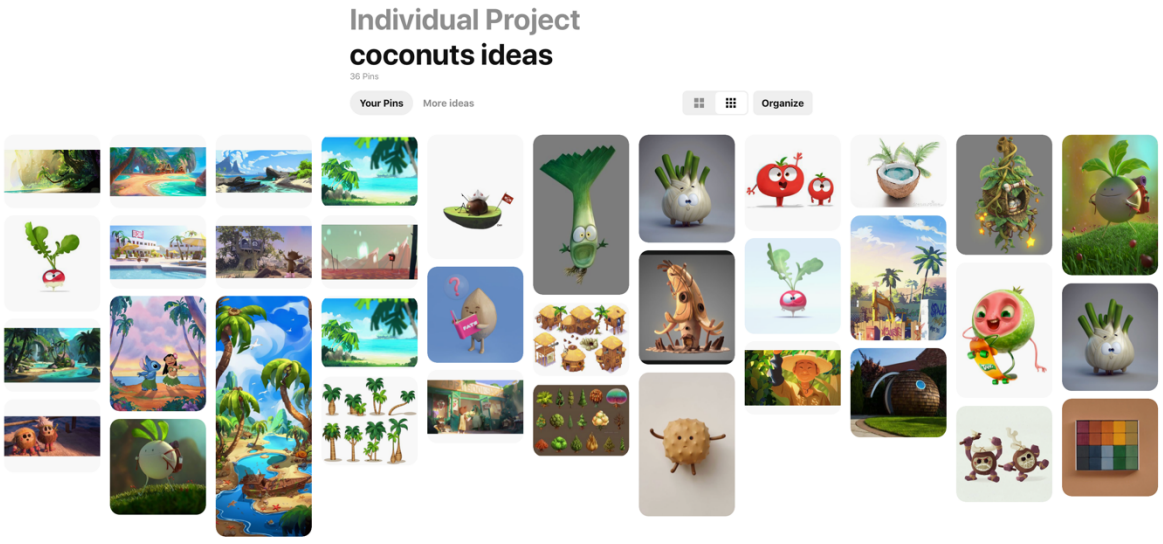


Figure 18: Pinterest board section

Figure 19: Moana beach scene, Disney

Figure 20: Lilo & Stitch beach scenes, Disney

Figure 21: Q Pootle 5, BlueZoo

Figure 22: Lynx & Birds, BlueZoo

After researching styles and deciding the kind of look I wanted to go for, I started sketching out ideas for how the environment and the character should look. The fact that I had done the animatic and previz before this step, allowed me to know exactly what would be seen on my scenes so that I wouldn't spend time on things that wouldn't be visible to the camera.

I started by sketching the character. The first decision I made was whether I wanted the coconuts to be brown coconuts, or green coconuts. There was a debate on it since brown coconuts could be more recognizable for an European audience, but as I wanted to keep it true to my Brazilian roots where coconuts are green and make it seem like a more tropical place, I opted to make them green coconuts.

Figure 23: Brown vs. green comparison sketch

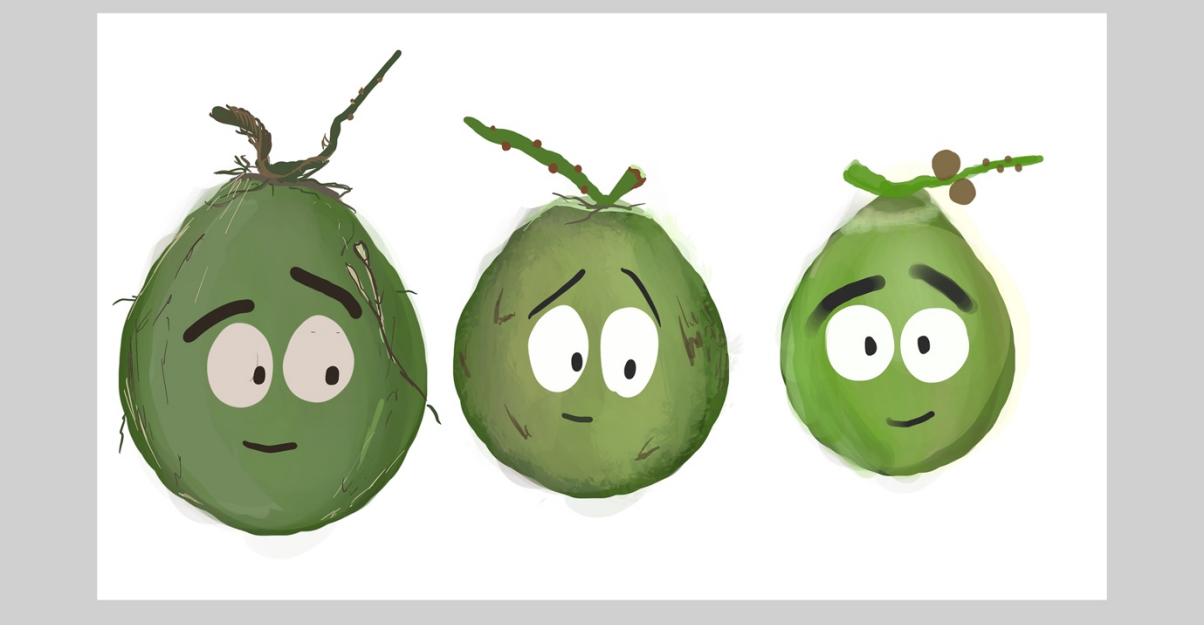


Figure 24: Character sketches to explore different ages.

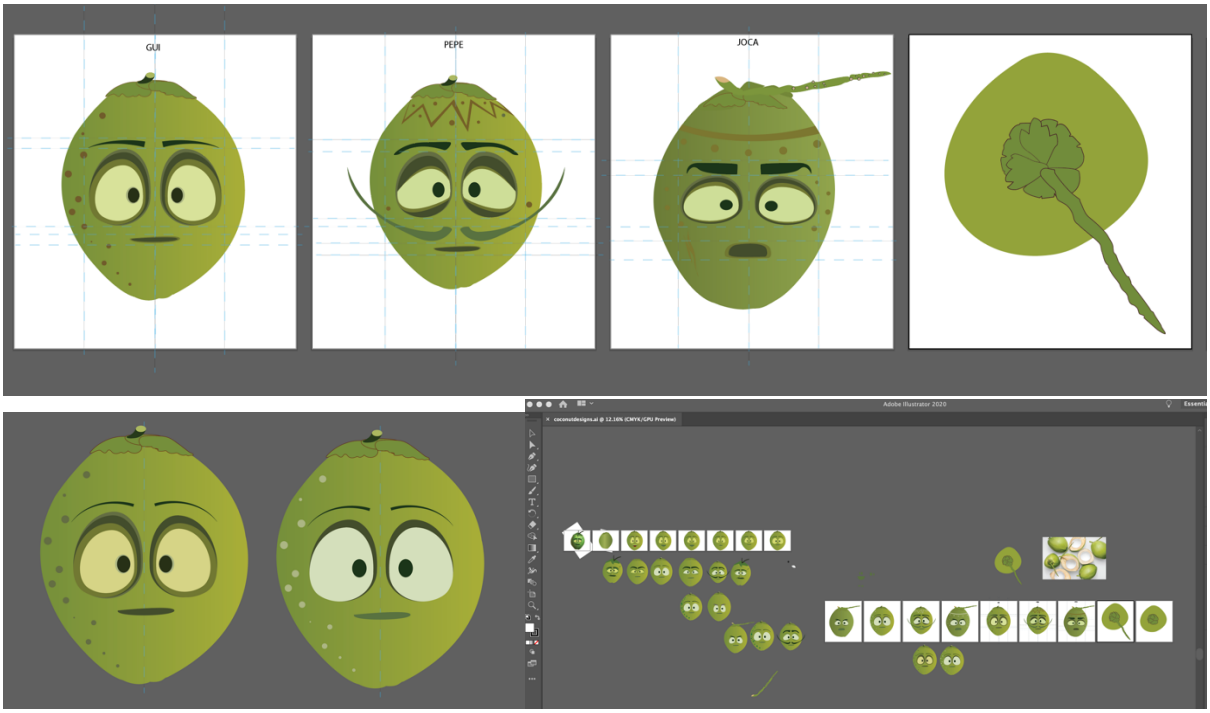


Figure 25: Different character design concept that was rejected.

A decision I took early on while experimenting with different character designs, was that the eyes had to be big. The reason why is that “the eyes are 90% of the facial performance” (Kelly, et al., 2009), and since my character didn’t have a body, I had to allow the eyes to be the centre of attention and very expressive. Another consideration was how to show that the coconuts were different ages. The solution was that the older the coconut got, the more marks it would have on the “skin” and the darker – more towards brown - it would look. The colour solution was also based on the fact that the difference between the brown coconut and the green coconut is just age, which means that the older the coconut the more brown it gets (Danahy, 2019). It also makes sense for Gui who is younger to be bright green as when they are green they are still developing and have more water (Danahy, 2019).

Figure 26:Coconut age colour comparison sketch.

- **At six months.** A bright green coconut contains only water and no fat.
- **At 8–10 months.** The green coconut has more yellow or brown spots. Its water becomes sweeter, and jelly-like meat forms, which gradually thickens and firms up.
- **From 11–12 months.** The coconut begins to turn brown, and the meat inside thickens, hardens, and develops its high fat content. The coconut is much lower in water.

Figure 27: Screengrab from Dahany's article on Healthline.com about how coconut ages, used for colour inspiration.

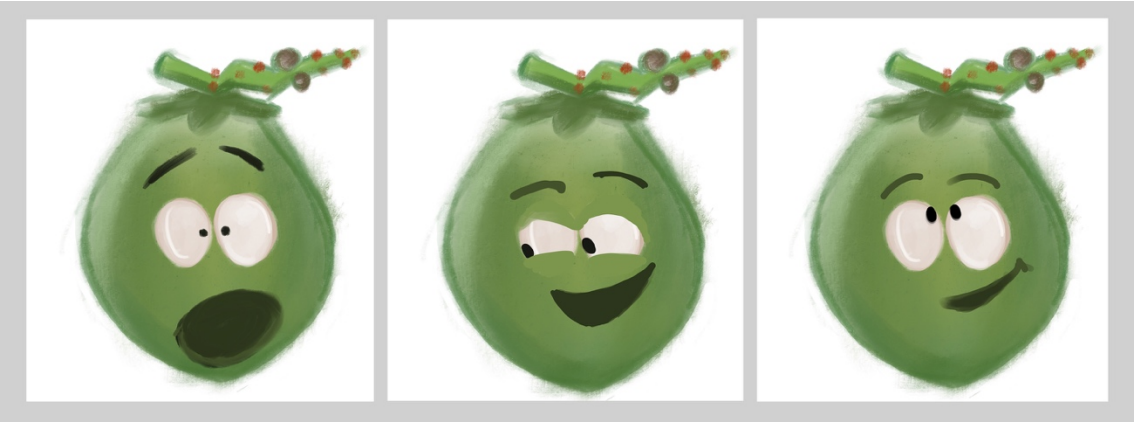


Figure 28: Exploring character design with expressions.

While designing the character I also decided to sketch the environment. Based on my previs camera's I knew I only had to design palm trees that had more detail at the top than bottom, a sky, a sea, sand, a knife and a straw.

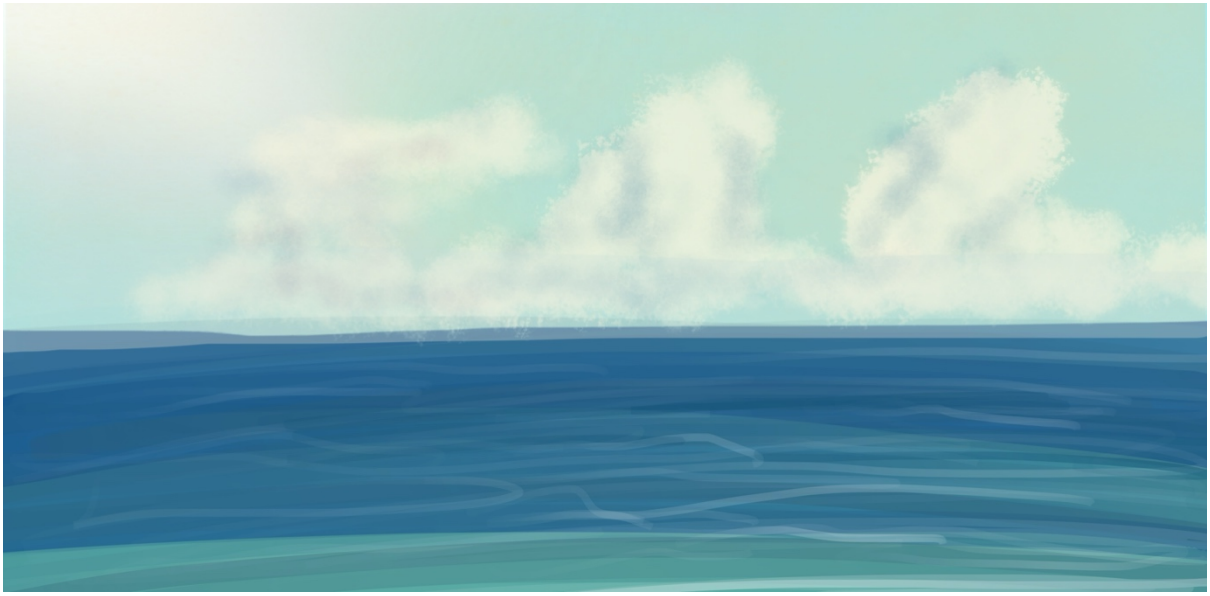


Figure 29: Experimental sketch of sea, sky and clouds.

Figure 30: Sketch of Rio de Janeiro Ipanema beach.

Figure 31: sketch of coconut and environment

MODELLING AND RIGGING

After all I was done sketching the environment and the character, I started working in Maya. I first modelled the character because it was essential that I could rig it as early as possible so that I could start animating. Both modelling and rigging the character proved to be very challenging, as I wasn't sure how to properly model so that it could deform as it should when I rigged it. Luckily, I was able to count on the help of Michael Davies, "whose main areas of expertise are modelling, texturing and rigging"(Escape Studios, 2020). Michael gave me a couple of one-on-one lessons on modelling and rigging, which helped to develop my character. The first thing he pointed out I was doing wrong was the topology of my character that would have not worked for rigging. Davies advised me to use a tool in Maya called Quad Draw, which lets you create new topology using a 3D model as a reference. That way, I could build the coconut shape without worrying about the topology and later adjust it. To model it, I extruded a cube until I got the shape I wanted and then used sculping tools to improve the shape. By switching symmetry on, I also ensured the model was symmetrical while re-topologizing. In addition, Michael taught me that a low-resolution model is also better, which is contrary to the high-resolution model I started working on before meeting with him, which was

making it hard to move vertices around.

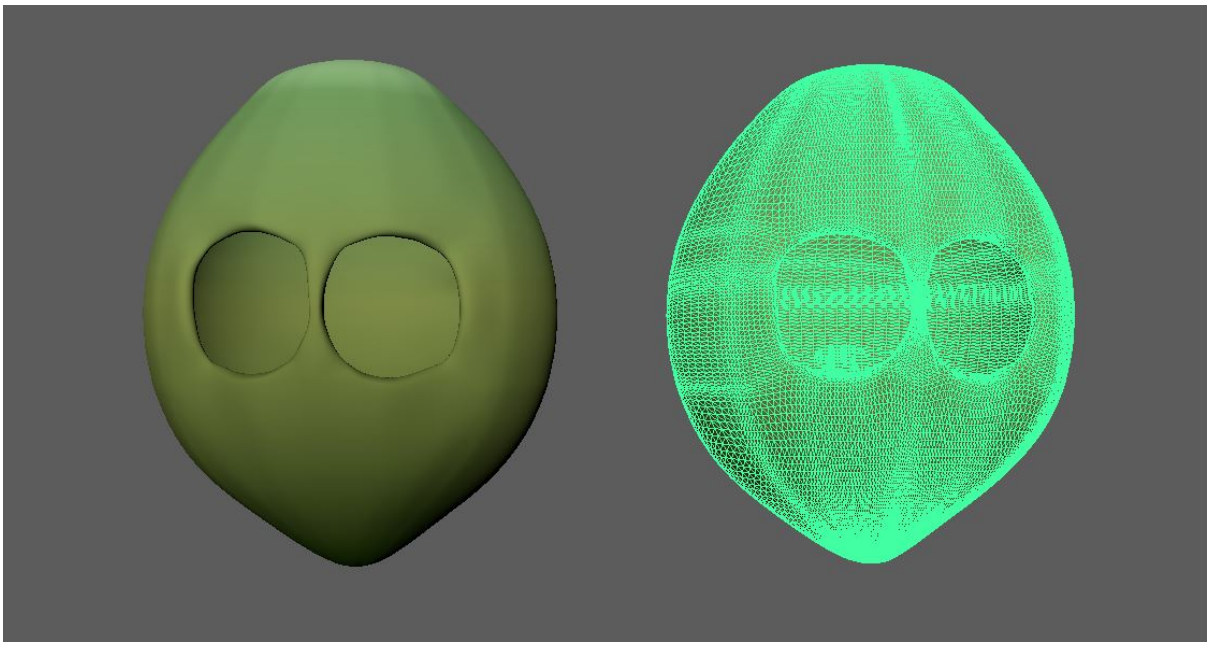


Figure 32: Initial high topology model, before switching to a low poly one.

Once the model was done and I started to rig it. I created two spheres to be used as eyes, created two joints – one in the middle of the eye & the other one close to the pupil, and applied a lattice deformer to make it look 2D and move as 3D. I created three controls for the eyes: one for each eye and parented it to main controller, allowing it to move together. Before parenting the controllers, I froze transformations so that I could always return to the original position. I then assigned an aim constrain for each controller.

After rigging the eyes, I rigged both eyebrows in a neutral position. Each eyebrow got four joints in order to give me flexibility to shape it and a controller for each joint, plus one main controller for each brow. The process was the same of freezing transformations and applying constrains, but this time I used parent constrain (which constrains transform and rotate) and scale. Then I connected the eyebrow and eyes joints to a central joint which was positioned in the middle of the Coconut's body and that was parented to a main controller that moved everything around.

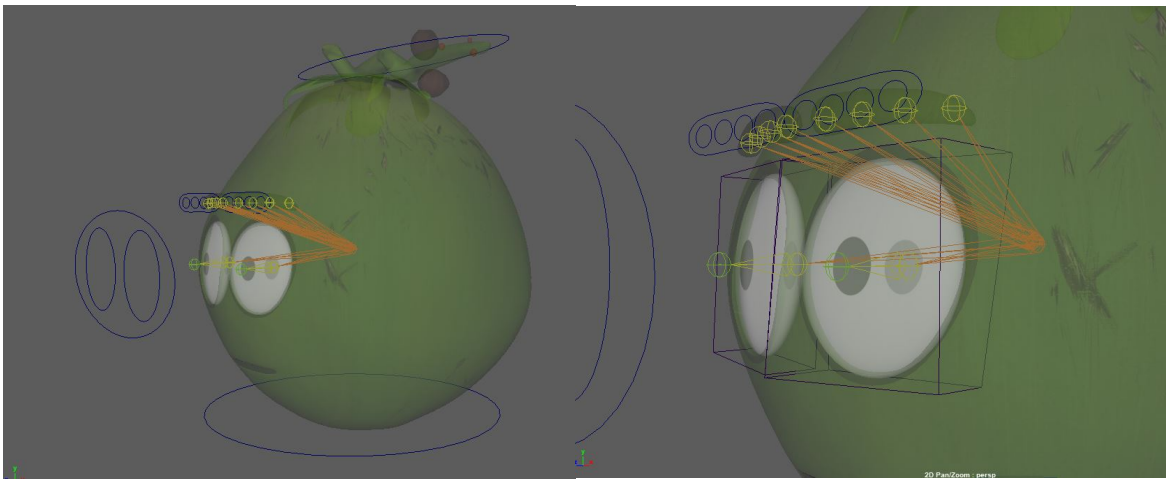


Figure 33: Coconut rig: a look at joints and controllers

Figure 34: Lattice deformers were used to achieve eye shape

After doing so, I used blend shapes to create all the expressions and mouth movement, as the mouth was not rigged with joints. As I created each expression on the blend shape editor, I duplicated it and painted blend shape weights to control each side of the face separately. That is very important for animation because not everything should happen at the same, for example, in a blink an eyelid should move slightly before or after the other. To guide the expressions, I created a list of the main emotions for each character and highlighted the most extreme ones, which I had anticipated could be challenging to create. Creating proper blend shapes was very crucial because a big portion of the success of my facial animation depended on those shapes looking good.

Figure 35: Character expression list created to aid in rigging face.

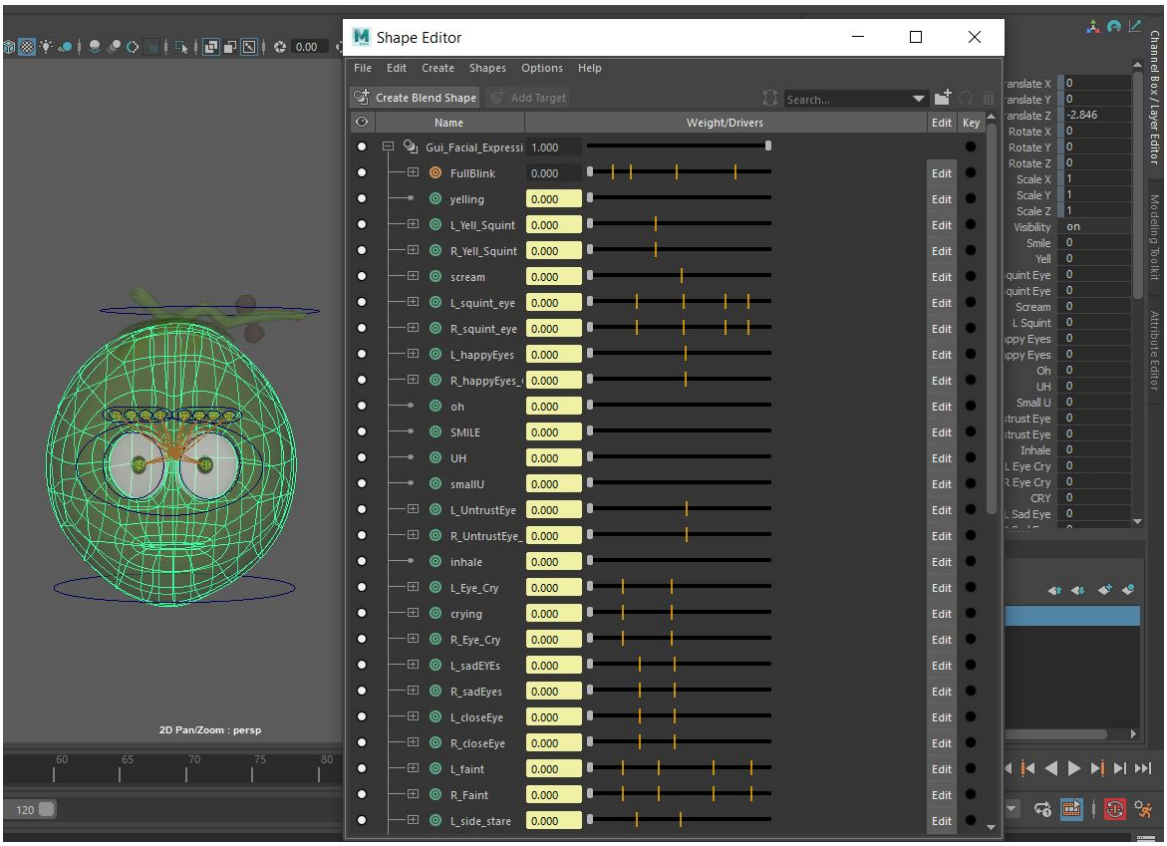


Figure 36:Creating blend shapes

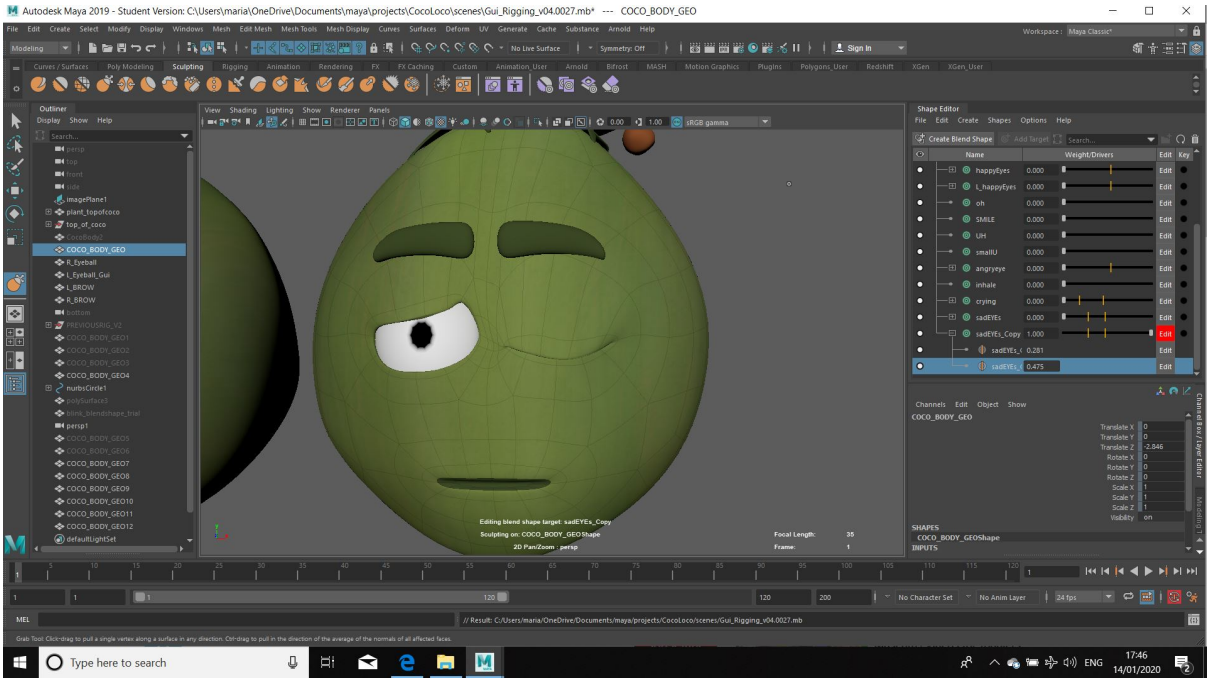


Figure 37: Sculpting blend shape

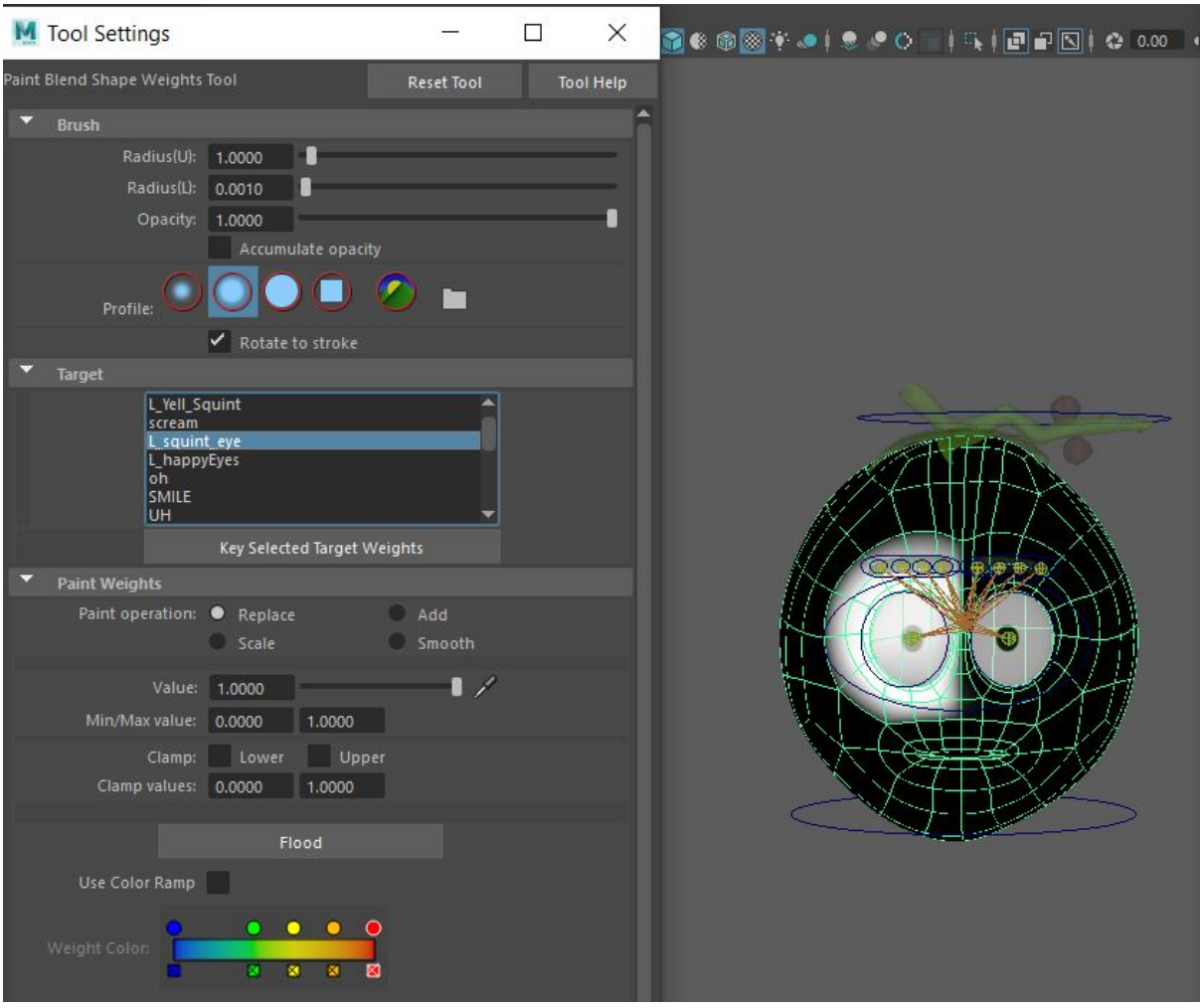


Figure 38: Painting weights on the blend shape to isolate the area it should affect when triggered.

Initially, my plan was to model all three coconuts and rig them separately, but since it took time to learn how to rig, I decided to use the same rig for all three, and make simple changes to the mesh shape without changing the topology so that the rig would still work. I further differentiated them through the use of textures. In addition, some of my shots have a human, which I opted to not rig as I was only going to use the rig's hands and therefore, I could allocate more time for animation. The human rig is David by Gabriel Salas, which was kept in its original form but with a new redshift material.

I also added a squash and stretch deformer to allow me to quick achieve those poses that are so necessary in animation.

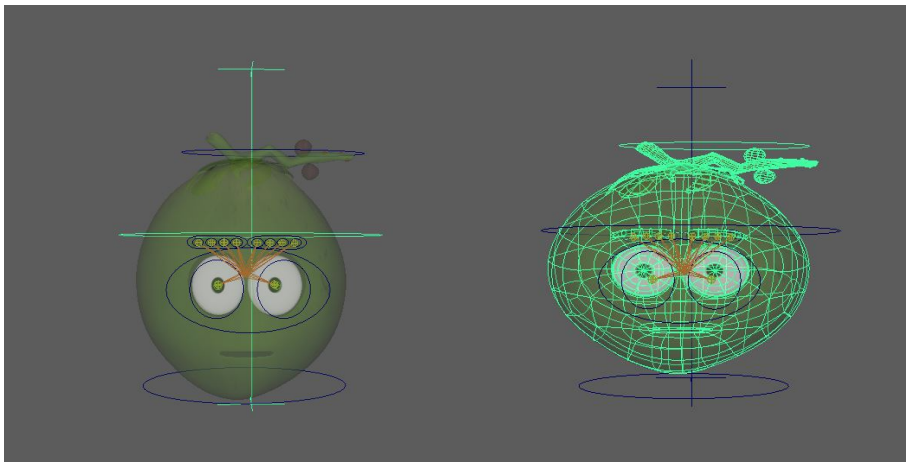


Figure 39: Squash and stretch handle, using stretch deformer.

Modelling the environment only required me to model three palm trees. I decided to have the sky and the ocean as a painting projected onto a plane and created a plane with water material to make it seem like the sea continued on top of the sand. In addition, I rigged the two main branches of the palm tree where the coconuts were attached so that they could move properly with the characters.

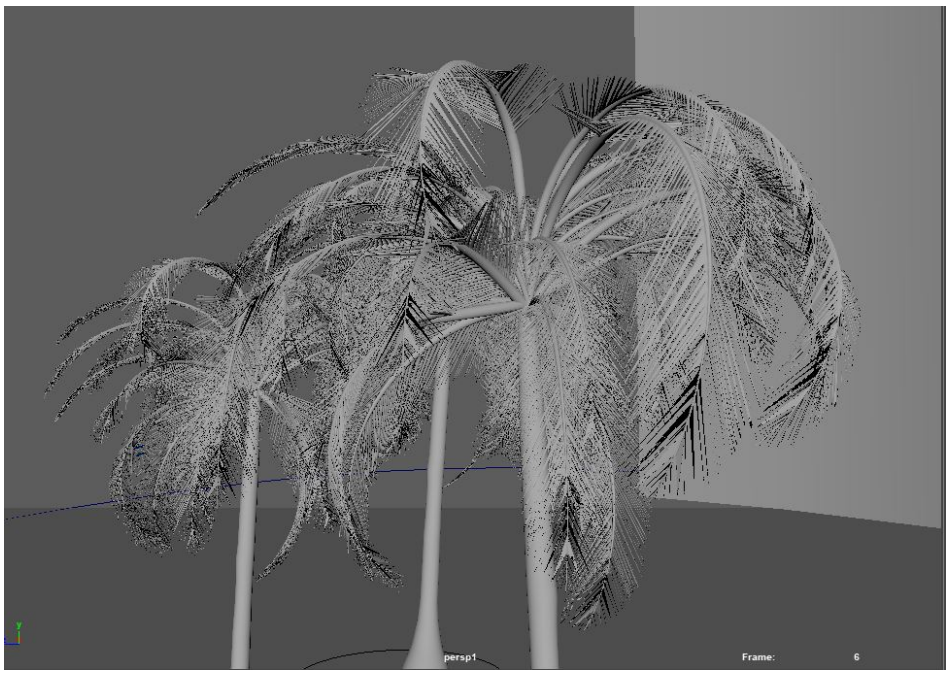


Figure 40: Coconut tree models.

ANIMATION

Once the essential 3D set up was done, I started the animation. The first step was to get all shots ready by referencing the environment on each scene, characters and props. I also added image planes with previs and my recorded reference of performance. Additionally, I fixed some of the camera positions to work better with my new set and characters, as it changed from previs.

After the scene was ready for animation, I began blocking. Usually when I am blocking I do it in stepped, but as my rig didn't support stepped preview, I could not follow that common practice. This proved to be slightly challenging as it made it hard to focus on poses without looking at how they are transitioning. Therefore, I had to adjust timing and transitions from the beginning to avoid the "floaty" look we usually get when we spline and work on auto mode. That also implied that I had to add holds, especially on the eyes.

As my characters depended so heavily on good facial expressions, I studied acting for animation and filmed myself a couple of times to ensure I was getting the emotions right. As Shawn Kelly, co-founder of Animation Mentor said, "your job is to become the character, especially in your reference and planning, if you want the performance to be unique and believable" (Kelly, et al., 2009). Therefore, I tried my best to understand each character's personality, feelings and goals. Every time I recorded a new reference or tweaked a scene, I became better at understanding how each character should act and react. Evidently, I paid crucial attention to the eye expressions as it is the most important part of facial animation and learned that "the most important […] aspect of doing eye animation is to know why you are animating the eyes,[…] floaty eyeballs can really kill a performance" (Kelly, et al., 2009). In fact, floaty eyeballs were something that I constantly reworked, and Amedeo advised me that eyeballs almost never take longer than four frames to move which was helpful to adjust it.

Furthermore, the book Acting for Animators by Ed Hooks, was very helpful in the process of animating. One of the things he mentions is that "action has more to do with intention than physicality" (Hooks, 2017). This made me question the meaning behind every movement my character made, and whether there was a need for it. If I couldn't justify it, then I would eliminate it until it all made sense. Hooks also goes through the 9 principles of acting and five of them were particularly important to aid me in the animation process:

1. Your job as a character animator is to create in the audience a sense of empathy with your character.
2. Action in pursuit of an objective, while overcoming an obstacle.
3. Acting is doing. Acting is also reacting.
4. Your character should play an action until something happens to make him play a different action.
5. Relationships are a factor of how characters feel about one another.

Establishing relationships and making the audience empathize is what adds more meaning to the story. If the audience doesn't care about the character, they won't care about the story. It was challenging in a short movie, with so much happening, to provoke such feelings, but I believe I have achieved this because quickly enough the spectator identifies Gui as a naïve child, which is an easy character to care for. To establish that Joca cares for Gui, I have made Joca look at Gui with concerned facial expressions.

In addition to acting concepts, I kept the 12 principles of animation in mind throughout the entire animation process. To animate squash and stretch I used the squash deformer handle that I added on the rig, which made it easier to animate but gave me a bit less control of the shapes.When I translated characters to the side or rotated them, it would affect the result in an undesirable way, which was limiting. To employ anticipation, I played with eyebrow movement. Another use of

eyebrows was to show that the character had a thought by gradually lowering his eyebrows before lifting it up, which I learned from Richard William's Animator's Survival Kit book.

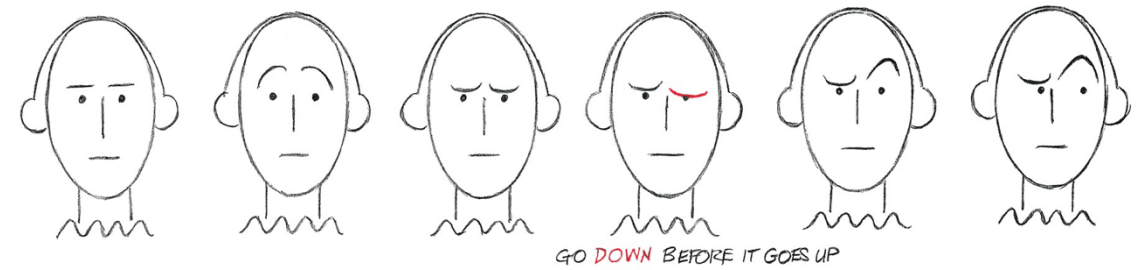


Figure 41: Richard William's Animator's Survival Kit illustrator of how to animate a thought process with facial expression.

At first, I had decided to make the coconuts really rigid to reinforce the idea of being stuck on the coconut tree. After seeing some of the first few shots, I noticed they were so rigid they barely looked alive. It was a big turning point when I started moving them around and it made anticipation and follow through stronger, in addition to giving the characters more personality, which made them more appealing. Arcs were also used, especially given that the most prominent movement of the coconuts is a head turn. To investigate the best way to do a head turn, I looked at Richard William's Animator's Survival Kit and kept in mind the character should blink and lower his in between turning from one side to the other.

Figure 42: Gui turns his head on an arc

Anticipation and follow through are also essential to deliver believable animation and were kept in mind throughout the animation process. Some examples of where it was used can be seen

when the guy chops Gui's head with a knife. Another way where anticipation was used was through the use of squash and stretch, which in that case the squash anticipated the stretch.

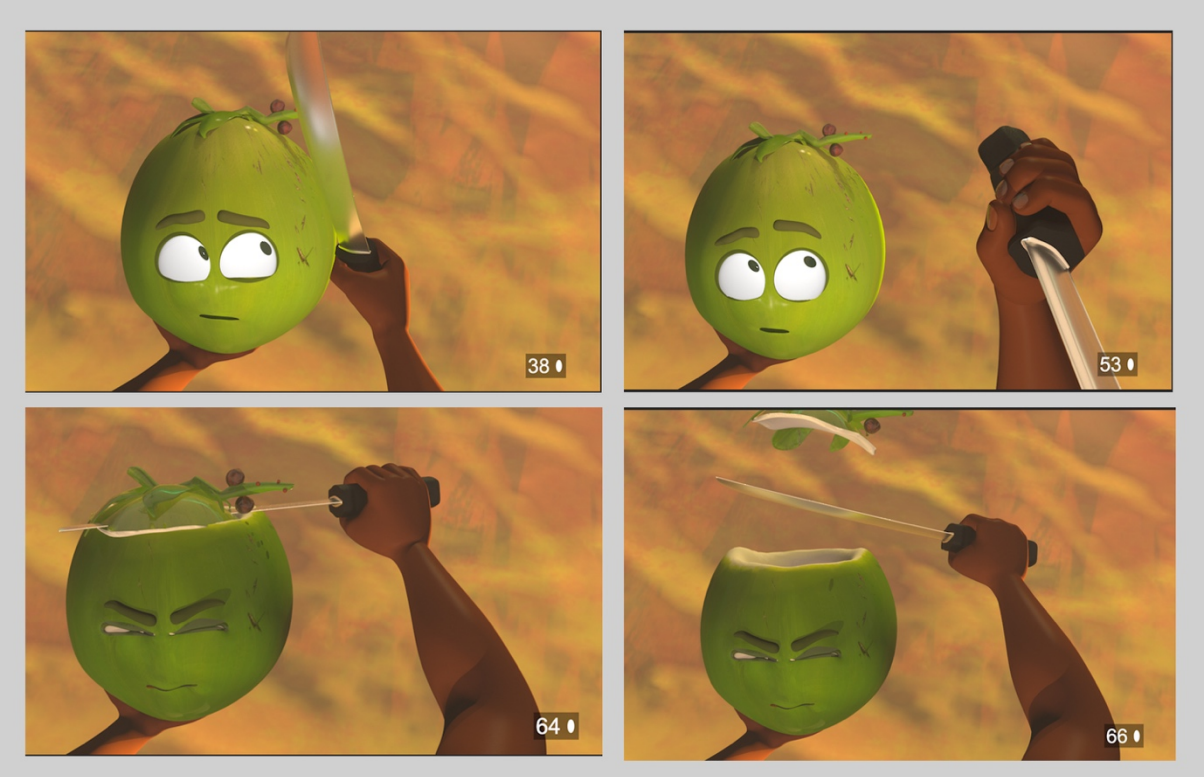


Figure 43:Anticipation and follow through

Figure 44: Gui squashing to anticipate the stretch movement

In order to animate object interactions, as for example the guy's hands holding a blade, a coconut or a straw, I constrained the controller of the object to the controller of the guys hands, so that the child object would follow the position of the parent. That prevented me from keying both objects at each position and made the movement accurate.

In busier scenes where I had more characters and props, I made everything but the object I was currently animating a template. That allowed me to visualize the object apart from the rest and select controllers with ease.

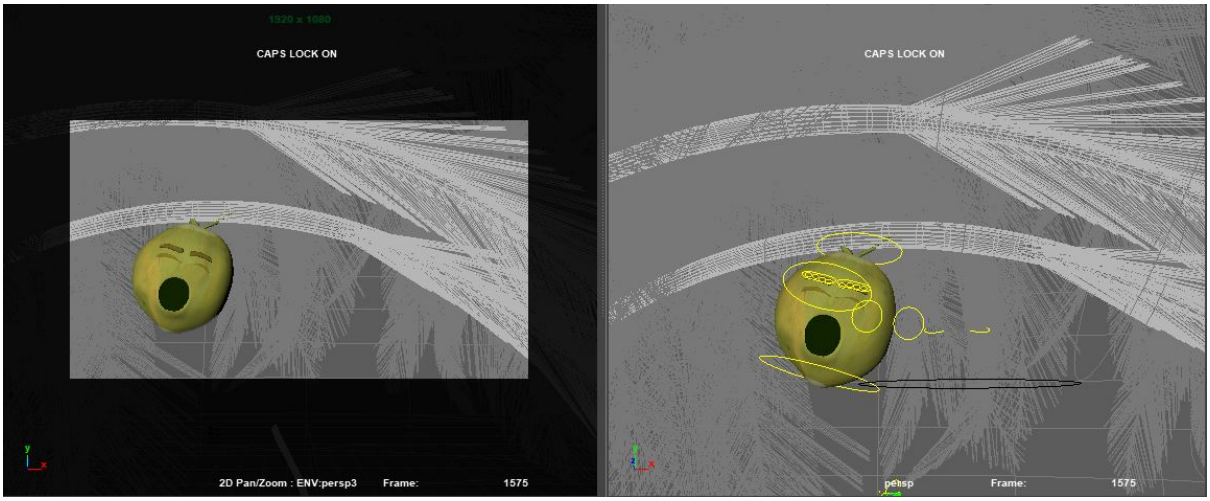


Figure 45: Objects were isolated by making the rest a template.

The animation process required a lot of feedback from Amedeo, and we used SyncSketch in order to allow for very precise feedback. Once we were happy with the animation, and I cleaned up the curves in the graph editor, I moved on to postproduction.

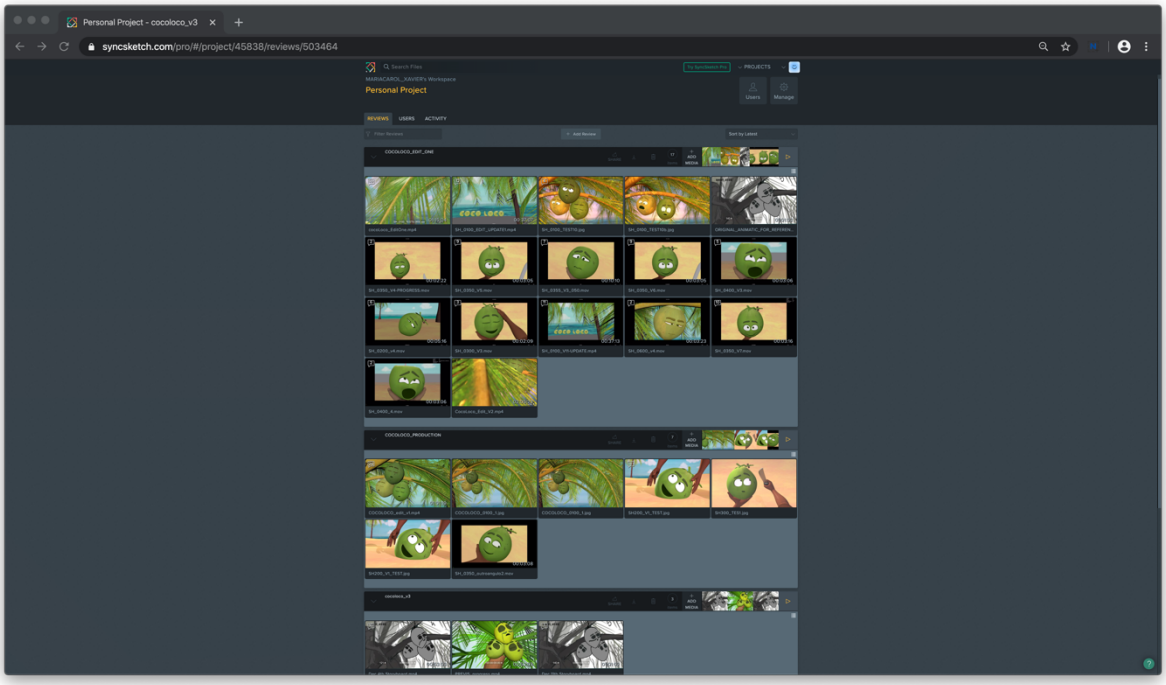


Figure 46:Syncsketch was used to obtain feedback.

CAMERAS

As previously mentioned, the cameras position was set up according to previs and then slightly altered for animation. One of the main changes I made to the camera was on the opening shot where the coconuts are sleeping because it felt too abrupt to start the movie with them sleeping already. I decided to change it to an establishing shot, first showing the environment to "let the audience know the setting for the scene they're about to watch" (MasterClass, 2019). I also watched some of Pixar short movies as "For the Birds," "Piper" and "Purl." Most have camera movement in order to get to the character, and they use that space to put the title of the piece as well. I also added some minor camera movement to most shots to make them feel more alive.

In addition, I added depth of field to the cameras to mimic a real-world camera. The way I set it up was by enabling object details on the heads-up display and checking the distance of the object that I wanted to be in focus from the camera. Then, I plugged that value on the focus distance of the camera, and selected the F-Stop based on the chart below. I also raised the focus region scale to 2, to allow a little more focus.

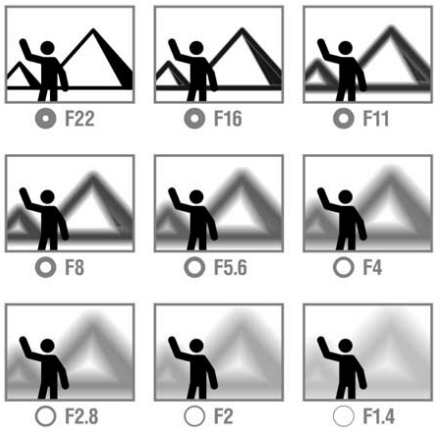


Figure 47: Depth of Field chart by Hollywood Lighting Partners.

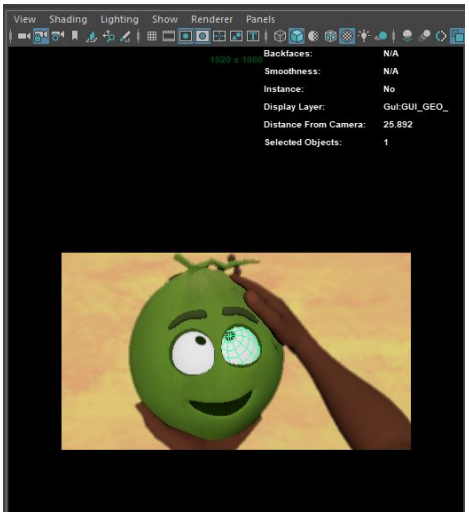


Figure 48:Checking the eye distance from the camera with display object details.

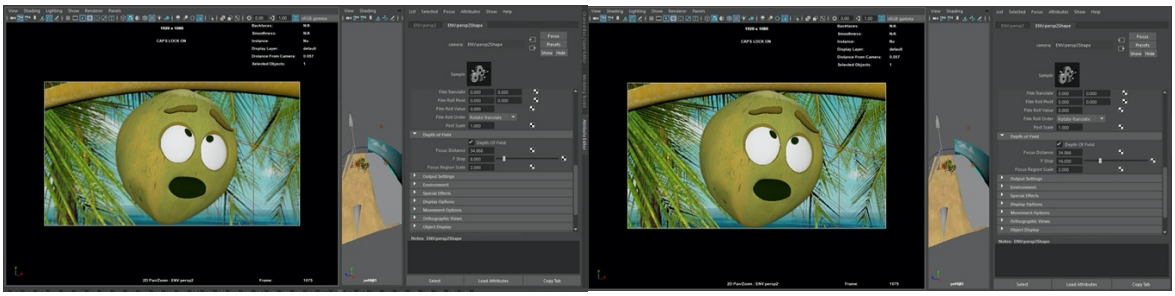


Figure 49:Experimenting with depth of field values.

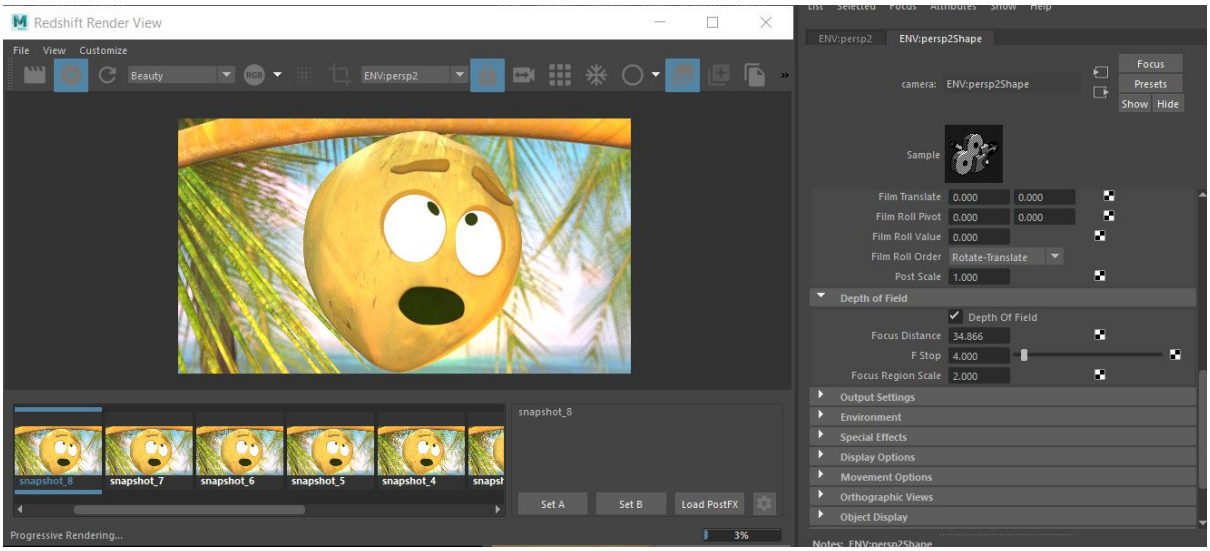


Figure 50: Depth of field with F-Stop 4.

TEXTURING & LIGHTING

The textures for the project were painted in Photoshop. The coconut textures are based on pictures that I took from coconuts. The sand, which was more complex, is a combination of my Photoshop painted texture with a displacement from textures.com. To displace the sand, I connected a height map and a normal map on Hypershade. I projected all textures using UV maps, the sand using planar projection and the coconuts cylindrical.

Figure 51:Textured environment as seen in viewport.

Figure 52: Images I took of coconuts while in vacation to explore the texture.

In order to light the scene, I used a variety of lights. For the characters I created a rim, fill and key. For the environment there were 2 spotlights, a directional light and a point light acting as the sun on the background. On a redshift spotlight, I switched on volume to add atmosphere. In addition, I used two gobos – which I projected on a plane for the light to go through, as I learned on a Youtube tutorial by Small Robot Studio. Since one of the gobos I used had palm tree leaves, I made the actual 3D palm trees not cast shadows. The characters eyes had separate lights and they each got point lights, one for each, to make them shinier. The individual point lights had specular

activated but not diffuse. To establish the relationship between the objects and the lights, I used the light-linking function on Maya.

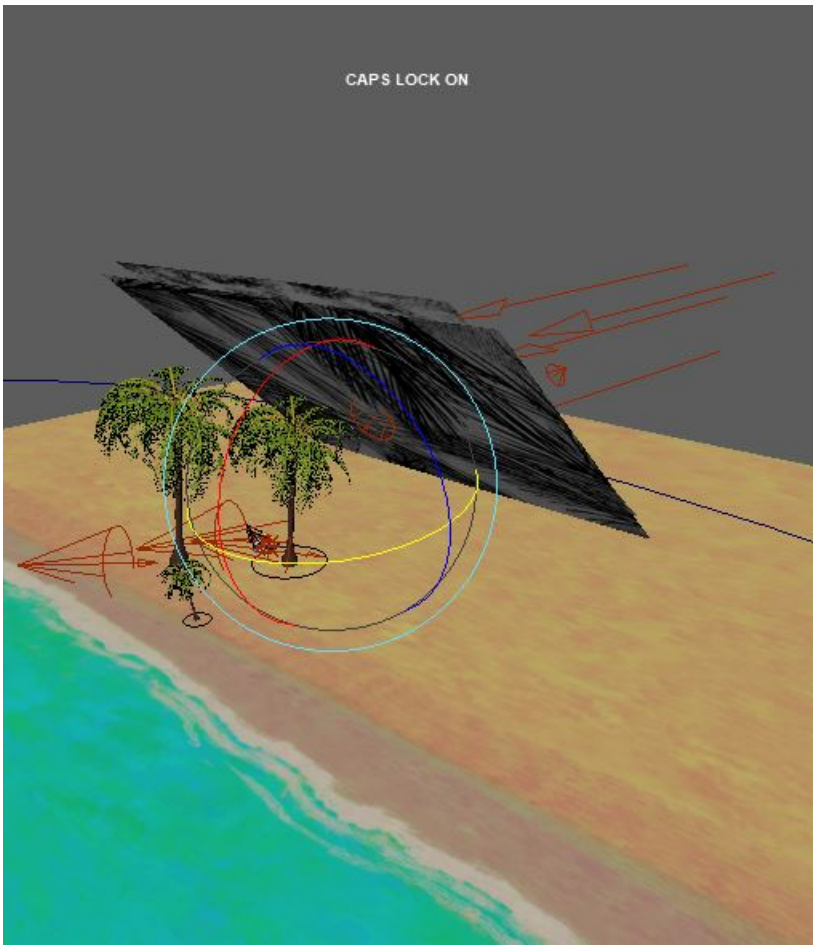


Figure 53: Light set up.

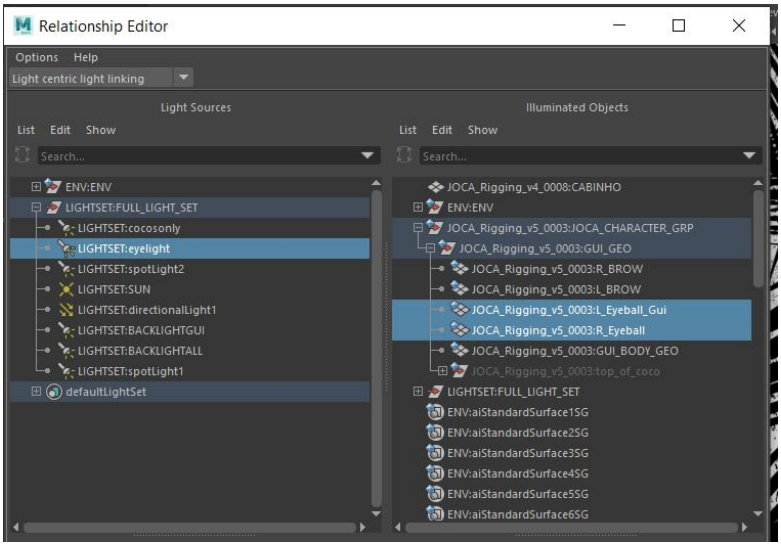


Figure 54: Light linking.

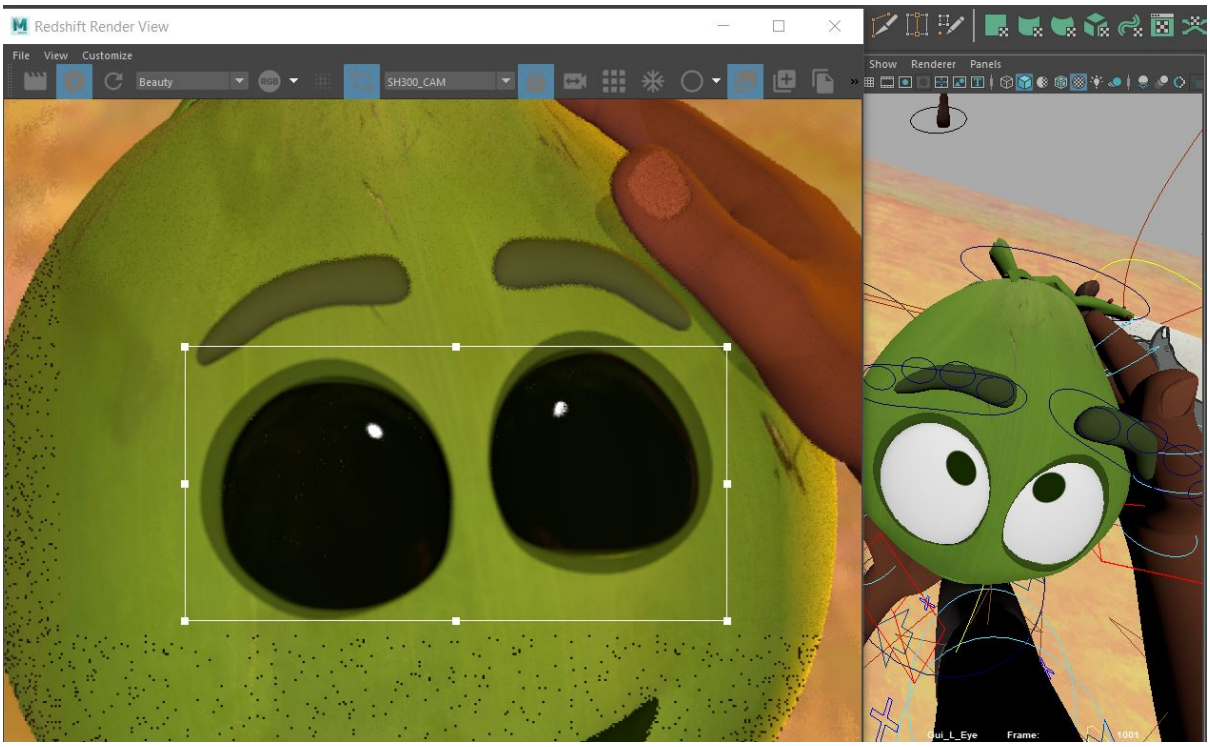


Figure 55: Point Light for the eyes set up.

VFX & SFX

The end product required me to animate some effects to compliment the animation. Among the effects, I had to add a bulge to the straw to make it look like someone was drinking from it. To achieve this effect, I added a sculpt deformer by inserting a sphere in the middle of straw and making the sphere deform the straw shape, as I learned how to do on a tutorial on Youtube uploaded by Discovering Maya. I animated the sand on Harmony using a tablet.

The sound effects were a mix of home produced and web sourced. Some of them came from a website called footage crate, others from Sound Snap and Pond5. I recorded the home-produced ones using a simple microphone recording system to reduce noise and enhance audio quality. The voice of Gui belongs to my cousin, Luis Felipe Britto, and it was recorded when I went to Brazil.

RENDERING WITH REDSHIFT

With the limited project execution time – a total time of four months prior to delivery – I executed research to find ways to optimize the pipeline, mostly in regard to rendering. Maya, the 3D software utilized in this project, comes by default with Arnold renderer, which tends to be slow in processing heavy scenes. According to Cartoon Brew, studios have been using real-time renderers, where rendering happens fast enough that you can see the image as you move on the scene (Failes, 2017). To optimise the rendering process, I used RedShift, the same renderer used by Blue Zoo which renders in real time.

Rendering was as usual complex due to the time it takes to render every frame. As I mentioned earlier in this paper, I chose to use redshift render which renders in real time. Yet, the amount of lights I had to use on each scene, plus light linking made the render process take longer. I did start rendering in advance so that I could constantly check for things to improve and see how

they were looking. Redshift also had a little bit of trouble running on my laptop, which caused delays as well.

All in all, Redshift did seem like a good render choice as I did not have time to learn how to use Unreal and Redshift allowed me to render faster than Arnold and set up lights in real time.

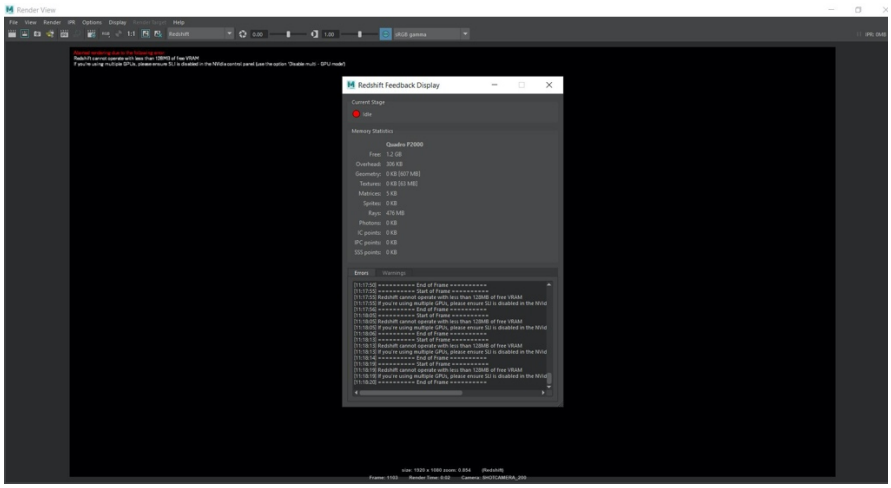
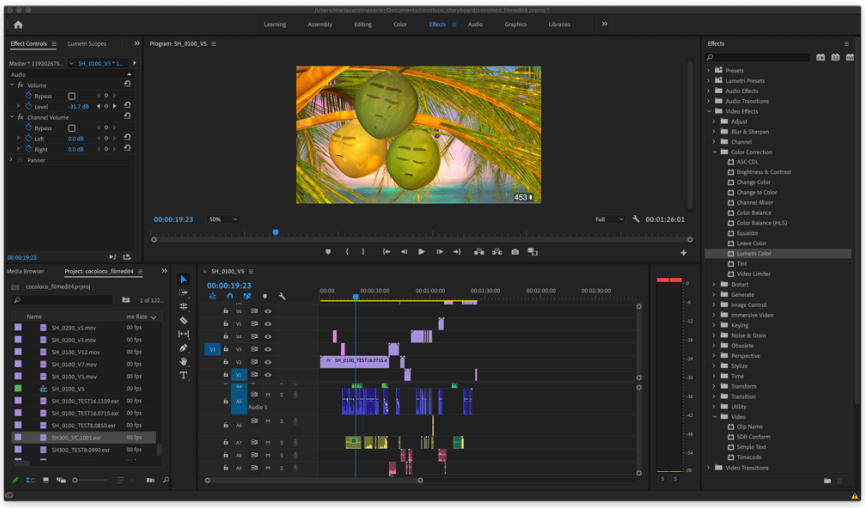


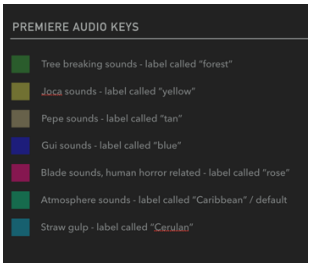
Figure 56:Redshift errors.

EDITING WITH PREMIERE

As I previously mentioned, I started the editing process from the beginning so that I could always keep track of how the story was flowing and what was needed. As I did not use render layers for rendering, it was a bit of a challenge to employ colour correction when editing as there were things that I did not want to change in the characters but wanted to change in the background and vice-versa. Still, I was able to do minor colour corrections using Lumetri Colour effect.

As my shot had a lot of separate audio tracks, I used the labels available in premiere to colour code them according to character or type of sound. That helped me be organised and have sufficient control to move things around, especially when a scene size would change. I also used the "De-Noise" audio function to make the sounds clearer and cleaner.





CONCLUSION, REFLECTION AND EVALUATION

The main goal of this project was to be able to tell a full compelling short story while displaying a wide range of skills and expanding my knowledge on areas beyond animation that were out of my comfort zone. Among the skills that were explored, I evidently placed the biggest weight on the animation itself. The second aspect of the project that took me a significant amount of time was rigging in a combination with modelling blend shapes, as the quality of my animation was completely dependent on having good deformations to work with – especially given that it was 90% facial animation.

Although I thought it was a very good learning experience to rig and model everything, I would consider for next time to find someone interested in rigging for me so that I can have a really flexible and high quality rig, possibly with joints on the face as well. That would have also allowed me to allocate a significantly bigger amount of time for the animation. Still, all things considered, rigging and modelling my own character was what allowed me to have my own story and not be dependant of what is available online.

Executing the whole project alone, from scratch, was a big challenge. Not being able to delegate parts of the production resulted in a snowball effect when something ended up being late, making everything fall behind as well. When I first approached rigging, I thought It would be relatively fast to rig just a face, but It ended up taking twice the time I had allocated. In addition, although I knew from the beginning that four months was almost not enough time to execute this project given all the aspects that I would have to work on to get it done, I still had a slow start and I had estimated working more on my break than I actually ended up having time to. Looking back at it, I could have divided my time better to not have so many things piled up at the last two and a half months of project. Still, throughout the whole project I kept track of the excel sheet I had created for time management to impose my own deadlines and know exactly when I had to be done with each task if I wanted to make it.

Furthermore, editing throughout the whole project, starting from the animatic, allowed me to always check whether the story was flowing from one shot to the next and if the story was coming across. In addition, I was constantly showing my edit to people to get their reactions and check if they were engaged in the story and getting the intended reactions, as for example, laughing, feeling worried for the coconut and feeling relief at the end. In fact, the twist at the end of the story wasn't originally intended. The story was supposed to end with the two coconuts dead because they fell down from the tree, but that was both concerning to people who gave me the feedback that they were feeling sorry for the coconut and seemed to not complete my character emotional arc. As Mary Coleman said, the third act of the story should complete the arc and the film should be resolved (Mary Coleman, n.d.). The fact that both of them just die didn't allow for the coconut to learn anything during this process that could make him feel any different. The solution of making it all a dream at the end, allowed him to understand that his original desire to go down from the palm tree, was actually not what he needed and he is relieved to not have actually done it and appreciates still being there with his family.

The end result actually surpassed my expectations. I am by no means saying it is perfect as of course I recognize there are flaws and it can always be improved. Yet, going in the project I felt concerned about what if I couldn't actually make the characters appealing, functional and alive? I worried people wouldn't get the story and that the face animation would be limiting. I think it turned out well, the coconuts look cute, they are very expressive, and I was able to bring personality into them. If I had additional time, I would have allocated it to further cleaning the animation and

making small tweaks to improve it and I would have worked further on effects, especially sand, which was very challenging.

The fact that I spent Christmas break, which fell right in the middle of this project, in Brazil and then in the Maldives allowed me to record reference using actual green coconuts and explore environments that were similar to the ones I wanted to create. I was able to explore how coconuts fall on sand, how they interact with it and play with different camera possibilities using the ocean on the background. I also observed how coconuts are attached to palm trees and how people cut it. This whole first-hand experience helped give my animation more information to work with.
It is the end of your character's emotional arc. The film should be resolved. (Mary Coleman)

When I compare it to industry shorts, I feel like there is still a long way to go, a level that can achieved when working with a team of people with different background and expertise. As I mentioned previously, the decision to work individually was unanimous on my class as everybody wanted to explore their own ideas, but it is impossible to not recognize the value that a team adds to a project, which is definitely something to consider next time around. When I look at shorts as Lynx & Birds from BlueZoo, I see a quality of lighting, texturing, rigging, modelling and animation that is hard to be achieved solo. It makes the whole story more appealing and believable.

All in all, I find it to be a successful project that is able to deliver a short story with a defined beginning, middle and end. It achieved good reactions from people that I showed before submission as they had natural emotions coming from it – mostly laughing. The story flows, the shots seem to work well together, and it was done to the best of my abilities at my current level, which I am proud of. I have exceeded my original expectations, while still being conscious that I can keep improving and refining it to take it to the next level.

Bibliography

BFI, 2020. [Online]
Available at: https://www.bfi.org.uk/supporting-uk-film/production-development-funding/short-form-animation-funding

Bird, B., 2019. *Guru Bafta.* [Online]
Available at: http://guru.bafta.org/animation-bafta-sessions
[Accessed 17 02 2020].

Bock, A., 1981. *KUROSAWA ON HIS INNOVATIVE CINEMA.* [Online]
Available at: https://www.nytimes.com/1981/10/04/movies/kurosawa-on-his-innovative-cinema.html
[Accessed 17 02 2020].

Briggs, S., 2019. *The Guardian.* [Online]
Available at: https://www.theguardian.com/film/2019/nov/01/british-film-animation-aardman-early-man-stop-motion-hollywood-studio
[Accessed 17 02 2020].

Danahy, A., 2019. *Health Line.* [Online]
Available at: https://www.healthline.com/nutrition/green-coconut
[Accessed 17 02 2020].

Discovering Maya, 2014. *Sculpt Deformer #example2.* [Online]
Available at: https://www.youtube.com/watch?v=8X4aXave-mg
[Accessed 02 2020].

DNEG, n.d. *DNEG: Feature Animation.* [Online]
Available at: https://www.dneg.com/feature-animation/
[Accessed 17 02 2020].

Edens, K., 2019. *ProWritingAid.* [Online]
Available at: https://prowritingaid.com/art/320/Are-You-Ready-to-Draft-Your-Story-Arc-.aspx
[Accessed 17 02 2020].

Ellis-Pettersen, H., 2014. *The Guardian.* [Online]
Available at: https://www.theguardian.com/film/2014/jul/24/animation-tops-uk-favourite-film-genre
[Accessed 17 02 2020].

Escape Studios, 2020. *Escape Studios: Meet your Tutors.* [Online]
Available at: https://www.pearsoncollegelondon.ac.uk/escape-studios/meet-your-tutors/michael-davies.html
[Accessed 2020].

Failes, I., 2017. *Cartoon Brew.* [Online]
Available at: https://www.cartoonbrew.com/tools/real-time-rendering-changing-vfx-animation-production-153091.html
[Accessed 17 02 2020].

Herr, N., 2018. *Animation Mentor Blog: What is Previsualisation?.* [Online]
Available at: https://blog.animationmentor.com/what-is-previsualization/
[Accessed 17 02 2020].

Hollywood Lighting Partners, 2016. *Hollywood Lighting Partners Shares Depth of Field Chart.* [Online]
Available at: http://hollywoodlightingpartners.com/2016/06/02/hollywood-lighting-partners-shares-depth-of-field-chart/
[Accessed 17 02 2020].

Hooks, E., 2017. *Acting for Animators.* 4th ed. Abingdon : Routledge.

Kelly, S. et al., 2009. *Animation Tips & Tricks.* [Online]
Available at: https://content.animationmentor.com/pdfs/TipsAndTricks_Volume2.pdf
[Accessed 17 02 2020].

Mary Coleman, D. T. J. R. K. O. a. R. G., n.d. *Khan Academy - Pixar in a Box.* [Online]
Available at: https://www.khanacademy.org/humanities/hass-storytelling/storytelling-pixar-in-a-box/ah-piab-story-structure/v/video-4-structure
[Accessed 17 02 2020].

MasterClass, 2019. *Master Class: Film & TV.* [Online]
Available at: https://www.masterclass.com/articles/what-is-an-establishing-shot-how-to-effectively-use-establishing-shots-in-your-film
[Accessed 20 02 2020].

Research and Markets Europe, 2020. *European Animation & VFX: Strategies, Trends & Opportunities (2020-25),* Europe: Yahoo Finance/ Research and Markets.

Research and Markets, 2020. *Global Animation & VFX: Strategies, Trends & Opportunities (2020-25),* Global: Yahoo Finance / Research and Markets.

Small Robot Studio, 2017. *Redshift Light Blocker Tutorial.* [Online]
Available at: https://www.youtube.com/watch?v=JhT3iIQvlo0
[Accessed 17 02 2020].

Stanton, A., 2020. *BAFTA GURU.* [Online]
Available at: http://guru.bafta.org/note-to-self-andrew-stanton
[Accessed 02 2020].

Stewart, J., 2018. *BFI.* [Online]
Available at: https://network.bfi.org.uk/news-and-features/industry-insights/what-makes-british-animation-british
[Accessed 27 02 2020].

Watson, A., 2019. *Statista: Size of the Animation Market Worldwide from 2017-2020.* [Online]
Available at: https://www.statista.com/statistics/817601/worldwide-animation-market-size/
[Accessed 17 02 2020].

Williams, R., 2009. *Animators Survival Kit.* s.l.:Faber & Faber.