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The Fisherman and the Devil

An artistic short film based on a folklore tale from Madeira island using interdisciplinary animation techniques

PROJETO DE MESTRADO

Vitor Tomé Soares Mendonça

MESTRADO EM DESIGN DE MEDIA INTERATIVOS



UNIVERSIDADE da MADEIRA
A Nossa Universidade
www.uma.pt

setembro | 2023

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Abstract

Folklore tales are one of the many methods of displaying the traditions and beliefs of a culture, being mainly preserved in literature, serving to enrich and teach the cultural knowledge and morals to any generation.

This project focuses on the creation of a short film based on a folklore tale from Madeira island, made with interdisciplinary animation techniques, combining 3D renderings with 2D drawings, all serving to preserve and pay homage in a more appealing visual media, that can be displayed and shared with relative ease. The thesis highlights the entire process of the animated work, relaying the difficulties of characterizing any culture, as well as the general concepts and principles of 2D and 3D animation. Underlining the logistical and creative decisions behind the production of an hybrid animation, disclosing the difficulties and techniques that surge when merging both mediums.

This report details the methodologies used for the short film, each divided in three parts, pre-production, where the concepts and ideas come to fruition; with character design, storyboard and animatic, followed by the production phase, comprised of the tests between programs and the chosen techniques, as well as the modelling, rigging and animation practices, concluding with post-production, with the full video editing process, visual effects, color correction and sound design. Culminating in the creation of a hybrid animation made with interdisciplinary techniques that visually retells the story about a fight between a fisherman and a devil.

Keywords:

Animation / 2D / 3D / Folklore / Short-film

Resumo

Os contos folclóricos são um dos vários métodos de exposição das tradições e crenças de uma cultura, sendo preservados principalmente na literatura, servindo para enriquecer e ensinar os conhecimentos culturais e morais de qualquer geração.

Este projeto centra-se na criação de uma curta-metragem baseada num conto folclórico da ilha da Madeira, realizada com técnicas de animação interdisciplinares, combinando renders 3D com desenhos 2D, servindo para preservar e homenagear a história num media visual mais apelativo, que possa ser facilmente exibido e compartilhado. A tese destaca todo o processo da animação, apresentando os problemas que surgem na caracterização de qualquer cultura, bem como os conceitos e princípios gerais da animação 2D e 3D. Sublinhando as decisões logísticas e criativas por trás da produção de uma animação híbrida, revelando as dificuldades e técnicas que surgem na fusão dos dois meios.

Este relatório detalha as metodologias utilizadas para a curta-metragem, cada uma dividida em três partes, pré-produção, onde os conceitos e ideias se concretizam; com o design de personagens, storyboard e animatic, seguida pela fase de produção, composta pelos testes entre os programas e as técnicas escolhidas, bem como pelas práticas de modelagem, rigging e animação, concluindo com a pós-produção, com todo o processo de edição de vídeo, efeitos visuais, correção de cor e design de som. Culminando na criação de uma animação híbrida feita com técnicas interdisciplinares que reconta visualmente a história de uma luta entre um pescador e um demônio.

Palavras-chave

Animação / 2D / 3D / Contos folclórico / Curta-metragem

Special thanks

I want to first thank my parents for putting up with me all these years, for financing and guiding me throughout my masters, and always making sure that I have everything that I need for my future.

A special thanks to my brothers that re-taught me the basics and shortcuts of Photoshop and were always available to help resolve any problems that occurred, in addition to their creative feedback on the animation.

Lastly, I want to thank my supervisor Pau Pascual, for being the artistic and creative guidance, always available to help and give tips and feedback at every step, enhancing the quality of the animation. Finally, and equally as important, my co-supervisor Sergi Bermudez, for being the technical and logical guidance on the project, always willing to help, presenting new and more interesting solutions that vastly improved the project. I want to thank both for being patient with me, even when the creation of the animation seemed to never end, thank you.

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I. Introduction

I.1. Motivations and objectives

Folklore tales present a historical importance in any culture, an extremely valuable means of teaching and divulging the cultural foundations and beliefs of any society, although being archived in literature can run the risk of disappearing, due to the disinterest of this media. This project was proposed by professor Pau Galbis, focusing on the creation of an animated short film about a folk tale from Madeira island, as a means to preserve and reveal the ideologies and beliefs of the original story in a more attractive and interesting visual media, an intriguing proposal, with an even more appealing goal, the experimentation between interdisciplinary animation techniques.

This thesis has the main objective of exploring the combinations between 2D and 3D techniques in an animation, reporting on its entire production pipeline, while disclosing the technical and artistic methodologies behind it, as well as relaying the vital concepts of transforming any tale into a short film, and the considerations needed for showcasing it outside the represented culture. At the same time, the animation encompasses two distinct interdisciplinary techniques, 2D traditional animation with contemporary 3D digital technologies, as a means of introducing an experimental flair to the project, as well as deepen my personal experience with both animation programs (Photoshop and Maya), chosen for their efficacy and familiarity, having previously studied them during and before my master's degree, learning new ways to mix them by creating a hybrid animation, which can be useful information for any aspiring artists. Leading to a fully digitally created animation, with the use of a laptop, a Wacom tablet, a Zoom audio recorder and three programs. Autodesk Maya was used for all the 3D parts of the project, while Photoshop and the tablet were used to create all the 2D drawings, concluding with DaVinci Resolve which served as the video editing program of the entire short film, with some additional custom sounds recorded by me.

In conclusion, this project was crafted with the goal of producing a visual recreation of a tale from Paul do Mar, that talks about a fight between a fisherman and a devil, in an intriguing action thriller piece, with the objective of adapting it for a diverse audience, made to be displayed on the internet and other digital medias.

I.2. Structure

This document is organized in six chapters that expose the work and research done during the production of the animation, including all the artistic and technical choices behind the scenes.

Chapter I describes the main goal of the thesis, relaying the motivation and equipment used for the entire project.

Chapter II compiles the ideas behind folklore tales, as well as the relevant concepts, principles, and techniques of animation, with the addition of relevant works that inspired the creation of the hybrid animation.

Chapter III justifies the contributions of the short film and the report itself, exposing the decision of the selected tale, with further concepts and ideas that originated from the story.

Chapter IV explains the full methodology of the project segmented in three different phases, akin to a full 3D animation production pipeline; beginning with pre-production, turning the concepts shown in the previous chapter into a storyboard, character sheet and animatic, then production, displaying the tests and techniques used, and post-production, describing the entire editing process.

Chapter V showcases all the iterations created before the finalized shots, ending this section with the breakdown of the final animation.

Chapter VI makes a brief revision of the results and research done, exposing the implications of the project and my opinion of the finalized work.

Lastly, all references used to create the report are displayed at the end, with the additional content created for the animation, for example the entire storyboard, links to the animatic, trailer and other visual concepts and designs.

II. State of the art

II.1. Folklore tales

Folklore tales are referred to stories that retell the knowledge and beliefs of a certain culture, originally shared and transmitted through word of mouth. Serving as a means of preserving the history of a community and a way of teaching generations about the traditions and morals of the culture. Depending on population, these stories often involve themes of religion, daily occurrences, historical events, and miracles, each one with the possibility of expressing a message or a teaching [1], [2].

Folk tales are essentially stories that were mainly shared through speech, meaning that most listeners would forget crucial parts of the original narrative, causing retellings with their own versions and different interpretations, until being finally preserved in literature, with the possibility of placing each one in a specific type of narrative or genre [1], [2], [3]:

1. **Myths** – are specific accounts of supernatural and sacred events, like stories about acts of gods and religious artifacts, that have a more symbolic narrative, that can be grounded in an actual event but tend to be more fictitious and more associated with a religious belief.
2. **Legends** – can be categorized as a traditional tale that has a historical basis, that depending on the culture can also have religious elements or miracles, that are often associated with heroes performing extraordinary actions, demonstrating their human values.
3. **Parables** – are created to illustrate a certain doctrine or a standard of conduct, essentially, parables are short stories specifically designed to illustrate or teach an individual about certain truths, religious principles or moral lessons.
4. **Fables** – are fictitious or untrue stories that can feature personified animals and objects as characters, like some myths. However, fables tend to end with an explicit good message, mainly aimed to teach morals about human social behaviors.
5. **Fairy tales** – as the name implies, are stories that mostly incorporate fairies and magic. Involving an individual that confronts and surpasses a strange or magical event, generally ending with a lesson.

6. **Folk humor** – some folklore tales can have a comedic narrative, mainly aimed to entertain the reader, that regularly involve two or more characters in a bizarre scenario that ends with a humorous punchline.

Tales that spawned from Madeira often involve stories that reflect on the simple social situations and ongoings of the island, like retellings of thieves that stole from local farms or trades between individuals, although some play on the old fears and beliefs, like stories about devils interfering with the lives of the inhabitants or witches tormenting farmers and also some historical retellings that range from realistic to mythical. Other tales evoke themes of religion, like various miracles created by faith, god purging evil, and thieves failing to steal religious artifacts, mostly ending with a lesson to be learned, followed by an affirmation of the power of god [4].

II.2. Animation

Animation is the process of bringing life to inanimate pictures. It's a technique, or a group of techniques, in which still images are manipulated in a sequence to create the illusion of movement (Figure 1). Involving mostly, long processes of drawing, sculpting, or photographing, frame by frame, image by image. With the ultimate goal of creating a story, that can entertain, inform, or even persuade, as Sébastien Denis states, animation is thus a multiform and inconstant tool, depending on the desires of the director and the producer [5].

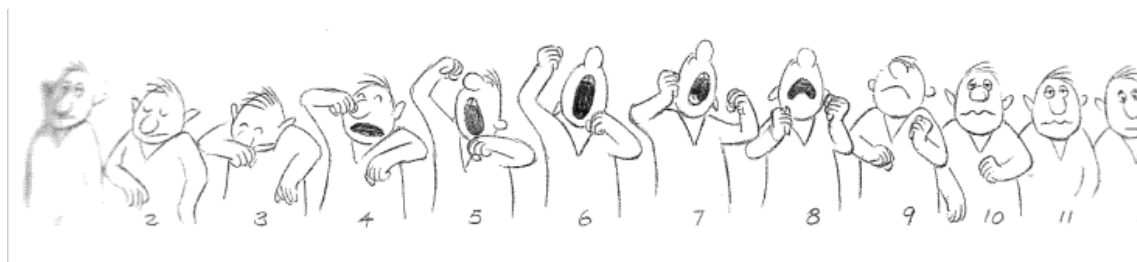


Figure 1 – Example of a sequence of drawings that create an animation [6].

II.2.1. Animation principles and concepts

Any technique chosen for the creation of movement, involves tedious repeating processes that give life to any character. Image by image, each one needs to abide by the rules of physics, evidently, the usage of these guidelines are dependent on the vision and art direction of the animator. These principles can be found in the book “The Illusion of Life: Disney Animation” by Ollie Johnson and Frank Thomas, which states the existence

of twelve principles that can produce a more realistic animation and give the illusion that characters can respond accordingly to physics, including also, general tips about character design and visual composition [6], [7]:

1. **Squash and stretch** – reveals that certain objects need to contract and then stretch to give the idea of weight, mass, and flexibility, just like a bouncy ball hitting the ground. This technique can also be used to exaggerate the movements or expressions of certain characters.
2. **Anticipation** – serves to alert the viewer of the preliminary movements before the action. By creating a small gesture before the major action, the viewer knows what to expect.
3. **Staging** – has the goal of guiding the spectators' eyes through a certain scene, by making sure that each animation follows a logical sequence of events and that each action is showcased clearly.
4. **Straight ahead and pose to pose** – the first technique begins with drawing the first key pose of a character and proceeding to draw the following frames, until reaching the wished final pose. While pose to pose, draws the key pose in the beginning but also the final one. Then the artist illustrates the rest of the animation in the blank spaces, also known as drawing the “in-betweens”.
5. **Follow through and overlapping action** – refers to the technique of having body parts or appendages drag behind the rest of the main body and continue to move after the main body stops, resulting in a more natural and dynamic look of the characters actions.
6. **Slow in and slow out** – indicates that most movements should begin slowly and then buildup speed, likewise, ending the movement in a slow manner, just like a car starting to roll and stopping gently.
7. **Arcs** – all natural actions and movements follow an arc, meaning that the human body does not move in a straight line, each action should create a circular path.
8. **Secondary action** – any primary action needs to have a secondary action, for example, when a character is walking, the primary action is the movement of the legs, while the secondary action is the movement of the body and arms.
9. **Timing and spacing** – refers to the space and number of frames between each animation, affecting the speed and movement of the action. If the animation has a large number of drawings close together, the result is a slow action and if there is a large space between each illustration the animation will look faster.

10. **Exaggeration** – each pose, action and reaction can be amplified to cause impact in the audience.
11. **Solid drawing** – if a character moves around, it's important to define the overall shape, with volume, weight, and balance, to give the idea that they are in a three-dimensional space.
12. **Appeal** – means that the characters should be pleasing and interesting to look at, keeping the design simple but at the same time find an aesthetic that fits the personality of the designed character. This rule also works in conjunction with the term “line mileage” meaning that if a character were to be broken down into just one line, the longer the line is, the more work that the artist has put in details that do not necessarily need to exist on that character.

Another concept refers to frame rates, standard animations run at 24 and 12 frames per second, meaning that each frame equals to a single drawing, image and pose, which is a time consuming process. Although, animators rarely and consistently create a new drawing for every single frame, artists can often hang onto a single drawing for longer than one frame, meaning that if it's on the screen for two frames, it's referred as animating on twos, if it's three frames, it's on threes and so on. The artist can decide which frame rate is best for their animation, though it's important to notice that both can be used simultaneously, using different frame rates in the same animation can be applied for each character to give the idea of two different individuals, using a lower fps for distant characters since they are hard to notice, or even a lower frame can look better and more stylistic for certain movements [5], [8], [9].

II.2.2. Methods of animation

Animations are largely defined within the categories of 2D and 3D. Two-dimensional art has only height and width, depth needs to be emulated, if desired, while three-dimensional art has height and width, but also has depth and volume [9].

For many years, the most common method used for developing 2D animations was acrylic paints on clear sheets called “cels”. This practice originated in the 1910s, the animators would first sketch the characters on semi transparent papers, drawing after drawing, flipping between the pages to review their animations. Then the illustrations were transferred to the cels, painted over and photographed, ending with the projection of the completed animation (Figure 2). This method is also called traditional animation, which means any animation that is drawn by hand, frame-by-frame, which can be seen in movies like “Snow White and the Seven Dwarfs” (1937) and “Sleeping Beauty” (1959).

However, the arrival of computers and digital technologies truly decommissioned the use of cels, nowadays the animation process is much faster and efficient, but still time consuming. Most animations can still be drawn on paper, however, they are now scanned and imported to an illustration program, like Photoshop or Adobe Animate, allowing artist to color, tweak the lines, or even remove the first process of sketching on paper, and directly draw on the software with the use of a tablet, ultimately becoming a full 2D computer generated animation [8], [10], [11], [12].



Figure 2 – Example of the cel sheets [13].

Two-dimensional animation also encompasses other methods that spawned from the traditional techniques, for example, rotoscoping, which uses the same principles of drawing each frame of movement. This technique relies first on a recorded scene with actors performing certain actions, which then the recorded video can be projected onto a sheet of paper or imported to an illustration software, serving as a reference for the animator to trace the outlines of the actors, frame-by-frame, creating more realistic movements, and adding other details like different clothes and character features (Figure 3). Nowadays, visual effects programs can automatically rotoscope any recorded video, removing wires from scenes and inserting characters in various backgrounds [14].

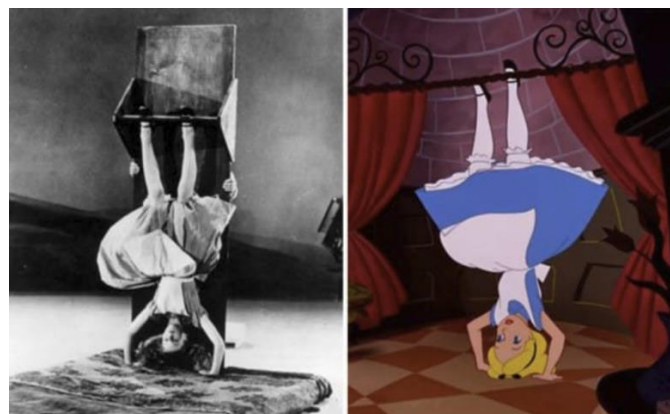


Figure 3 – Example of the rotoscope in “Alice in Wonderland” [15].

Another example is cut-out animation, which uses a technique called stop-motion. The artist first draws the characters or cuts them from a magazine, then places them on a flat surface with a camera placed on top, pointing down. Each time the artist moves the characters, they take a picture, repeating the process until creating an image sequence of the pretended animation (Figure 4) [16].

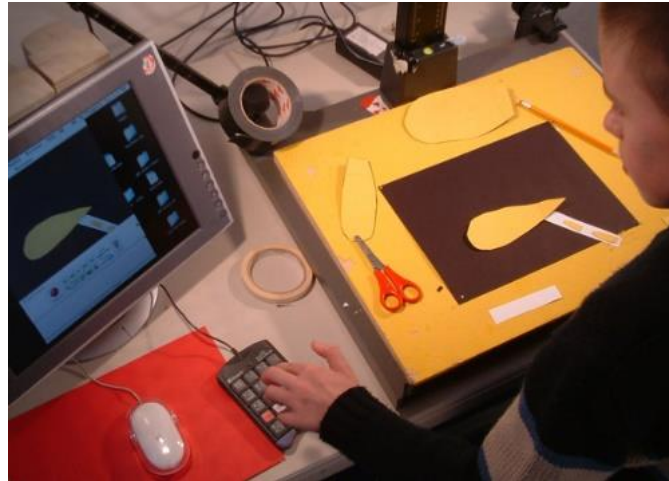


Figure 4 – Example of the cut-out process [17].

Concluding with vector based or vector motion animation, which is a fully computer generated technique, here the animator creates a character with each part of the body separated into sections, they then place pivot points in each limb, rigging the model to move and bend (Figure 5) [8], [18]. Allowing the animator to manipulate each part of the character and create two key poses, for example, one sitting down and another standing up, keyframing each one, the program will then interpolate both poses and automatically generate the full movement between them [19].

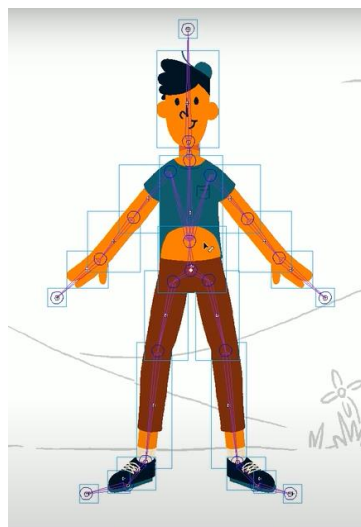


Figure 5 – Fully rigged vector character [20].

Nowadays, 3D animation is associated with computer generated imagery, or CGI, although, three-dimensional animation also includes claymation and puppet animation, which both use the same stop-motion technique as cut-out. In this case of claymation the characters are built using clay or other malleable materials, with some having steel wires inside, acting as bones that can be moved and positioned, while puppet animation, mainly involves rigid models that are fully articulated [21]. Using the exact same stop-motion techniques, the artist takes a picture each time they move a part of the character, then joining all the image sequences in an editing program to generate a full animation (Figure 6).



Figure 6 – Behind the scenes of the 3D stop-motion process [22].

Digital 3D animations can be created in specific programs such as Maya or 3Ds Max, allowing artists to build and sculpt their own characters or even import premade ones [23], [24]. With the model inside the program, the first step in any 3D character animation is “rigging”. Character rigging is the process of placing or creating a skeleton inside the model and constraining each joint to the respective parts of the body, allowing the animator to move any appendage separately (Figure 7) [8], [18].

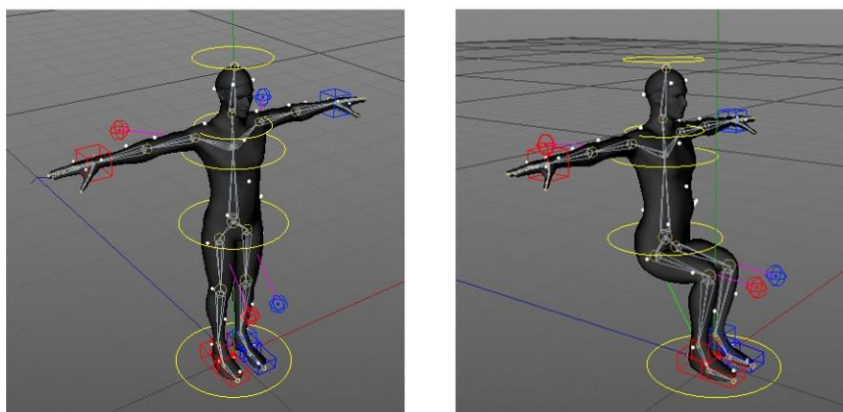


Figure 7 – Fully rigged 3D model with skeleton [25].

With the completed rigging process, all 3D computer animation techniques become available. Beginning with manually animating the character, which involves both forward and inverse kinematics. The skeleton inside the model has a hierarchy level between each bone, in forward kinematics, the joint that is higher on the hierarchy affects all the bones below it, for example the elbow joint is higher on the chain meaning that moving it also affects all the joints in the hand, allowing artists the full control of each movement, whereas in inverse kinematics, a joint that is lower in the hierarchy gains control over a set of bones that are higher on the chain, allowing the animator to move the aforementioned hand joint and the program will move the entire arm, bending and moving accordingly, creating a more natural movement [26].

Using either forms of kinematics, the animator then keyframes the first and last poses, letting the program interpolate the X, Y and Z coordinates, creating the animation between the key poses [19].

Lastly, motion capture. As the name implies, captures the real movements of any individual, with the use of specialized suits or even a tracking camera, transferring the exact actions to the skeleton of the 3D model (Figure 8) [27]. Both methods require the use of expensive equipment and facilities that might not be available to an animator, although, motion captures libraries exist, like Mixamo, allowing artists to download any desired animation and directly import it to a rigged character [28].

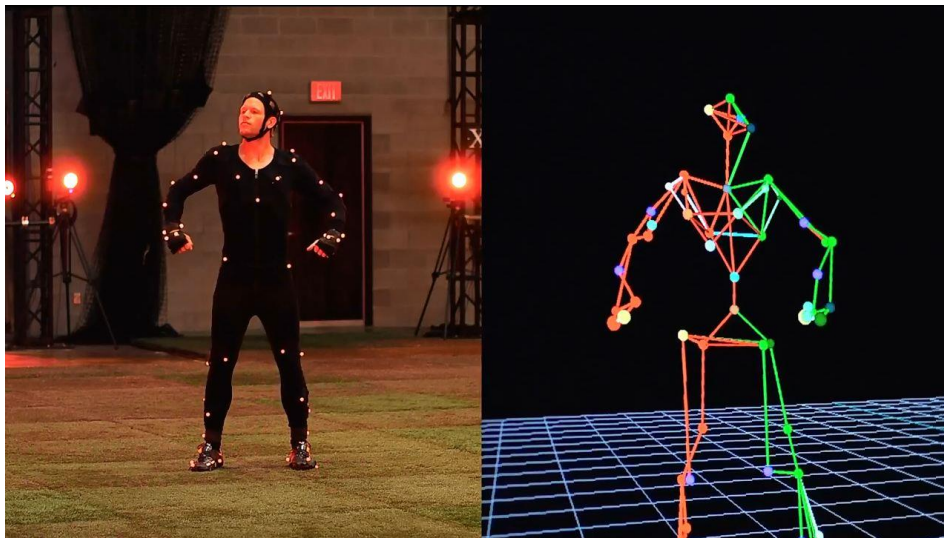


Figure 8 – Showcase of the motion capture suit [29].

II.2.3. Relations between 2D and 3D animation

As technology evolved over the years, animations started to deviate more into full computer animated films. The popularity and transition into full 3D animations seemed to begin in the 80's, thanks to experimental films such as, Luxo Junior (1986) and Tin toy (1988), created by John Lasseter (Figure 9). Only later, in the late 90's, movies like Toy Story (1995) and A Bug's Life (1999), became box office hits, fully popularizing the medium, establishing a golden era for 3D animations, causing the apparent disinterest for 2D animated films like, The Prince of Egypt (1998) and The Road to El Dorado (2000), which both failed to meet expectations [5].



Figure 9 – Frames from the experimental films 1) Luxo Junior [30], 2) Tin toy [31].

According to Sébastien Denis, the popularity of digital animation is hard to analyze [5]. One hypothesis is that viewers could relate the 3D graphics with video games, the 3D characters can be more pleasant to watch or even be associated with real people or even toys. For animators, over the years, most tools and programs evolved, becoming even more accessible and easier to learn, unlocking new and faster ways to animate. Resulting in animations that were, depending on the equipment and techniques, cheaper and quicker to produce, in relation to traditional cel animations.

“The division between what medium is best for what subject matter has become so blurred as to be nonexistent.” (O’Hailey, 2010, p.21). Nowadays, the choice of using 2D or 3D, comes down to several aspects. One of the largest factors in the decision is visual style and visual target, as both mediums are widely accepted and successful, the style is dependent on what the artist considers as the best medium to achieve their final vision [9].

Another motive is the term “line mileage”, as previously mentioned, if a character were to be broken down into just one line, the longer it is, the more excessive work the artist has put in unnecessary details, wasting time and making it harder to animate. An example would be the use of crowds, if a 2D animation requires a crowd, a common practice is to use 3D background characters to reduce the line mileage (Figure 10) [9].



Figure 10 - Frame from the movie "The Hunchback of Notre dame" [32].

Equally, depending on the complexity of the shots and characters, 3D can be used to move complex elements that are difficult to animate believably when using traditional methods. Rigid objects shown in different perspectives or displaying various textures and details can become distorted when drawing in 2D. A good example is the use of 3D vehicles in 2D animations, since the car is a solid geometric object, it would be hard to animate it believably in 2D (Figure 11) [9].



Figure 11 – Example from the anime "Initial D" [33].

Another reason is team skill and production schedule, the choice also depends on the experience of the animators and the time given to complete a project. If a team is not comfortable when using a new medium and does not have a schedule to train and retool, the safest option is to resort to what is known and faster to complete before the deadline [9].

The final reason, is physical assets and budget. Each distinctive medium has its different costs, evidently. As noted earlier, computer animation softwares have become more accessible, but 3D studios are costly to set up and maintain, requiring heavy duty computers and equipment, however, they can save costs by having smaller crews. In the case of traditional 2D animation, costs can be kept low with homemade equipment and can be slightly cheaper if opting to use fully digital 2D animation, saving time in sharing art assets, discontinuing the process of scanning each individual drawing [9].

II.2.4. Hybrid animation

“Hybrid animation is the combination of two-dimensional (2D) and three-dimensional (3D) animation media.” (O’Hailey, 2010, p.18). The choice of merging both dimensions may come down to the same aspects mentioned earlier; this is dependent on the final vision of the animator, who can give an artistic meaning or a logistic reason for merging both dimensions [34]. For example, optimizing line mileage and time, by creating a full 3D scene, the artist can allocate more resources and attention to the 2D animation. Likewise, the need for complex shots, effects and characters, which depending on the experience of the animator, can be complicated to create in 2D, such as elemental effects, like fire and electricity, as well as geometric objects that can look unstable if hand-drawn, and detailed characters with complex textures that only CGI can replicate believably [9].

Certain issues surge when joining mediums, like style matching, depending on the plethora of possible combinations between dimensions, the animator needs to know and test the programs and techniques that can create a mutual art style between animations [9]. On the other hand, some animations can aim for an intentional stylistic disunity, for example, “The amazing world of Gumball”, a cartoon where the main characters are 2D in a 3D background, a common example of hybrid animation, although, some side characters present various clashing styles, some full 3D, others made of clay, paper, pixelated, geometric, all serving to aid in the chaotic nature of the show (Figure 12).



Figure 12 - Showcase of the characters from the show “The amazing world of Gumball” [35].

Another concern when mixing dimensions is visual registration, this is an issue when two distinctively animated characters come into contact with each other. In the past, one solution was to print out each frame of the 3D object, and then draw the 2D character on a transparent paper, placed on top of the print. Nowadays, depending on which element leads the other, if a scene contains more 3D than 2D or vice versa, the one in majority will lead. For example, in a 3D predominate scene the 2D elements will have the least priority in a production pipeline [9].

The final considerations in mixing techniques are the frame rate, image format and size. In a solo or a small studio, this can be a minor issue, but it's always important to check if everything matches. In terms of frame rate, as discussed before, some animators can use separate frame rates for different characters, to convey the size and speed of movements. As for image format and size, it's always necessary to use the same scale and resolution between mediums, to be consistent and create a smoother animation production [9].

II.3. Relevant works

With the goal of creating a hybrid animation, it's essential to disclose the relevant works that influenced the project. Learning from the previous processes that allowed the merging of techniques and mediums, as well as the logistical and creative reasoning for their use.

The first example comes from the movie "Beauty and the Beast" (1991), this film combined both traditional animation with computer graphics, this merging can be seen during the ballroom sequence of the movie, here the film inserts 2D hand-drawn characters inside a fully digital 3D background (Figure 13). They achieved this technique thanks to a program called Computer Animation Production Systems (CAPS), which unlocked the ability to scan any drawing and paint them digitally, this program also allowed to import any illustrations to a computer-generated environment and use a digital camera to record the shot. In the case of the movie, the camera was in constant motion, changing perspectives in every frame, creating a complex scene, this meant that the animators had to draw both characters in their corresponding angles and positions, coming up with the solution of placing reference objects as the characters inside the 3D world, pinpointing the exact locations and perspectives where they needed to be drawn [36], [37]. This method influenced the project, since the goal is to implement a 2D hand drawn character inside a 3D environment, the idea of placing a reference to be drawn on top, proved to be very useful in the production of the animation.

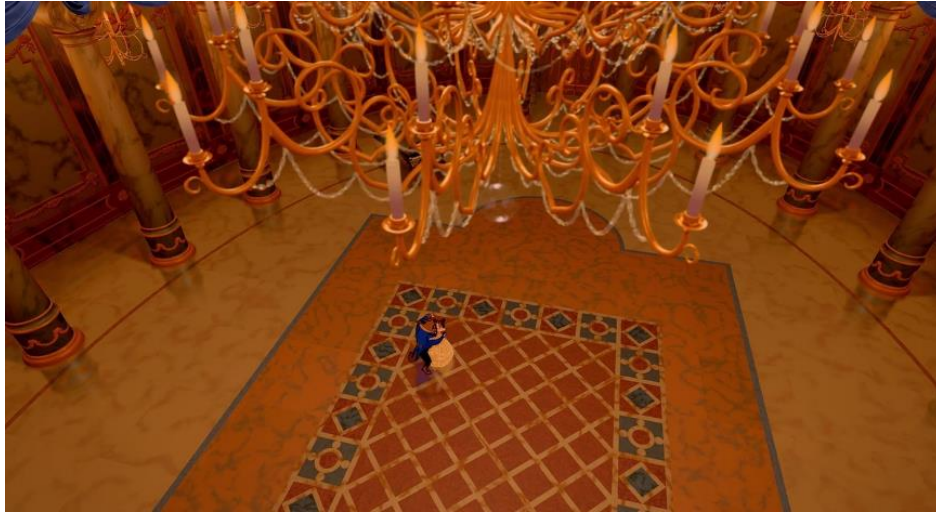


Figure 13 - Showcase of ballroom scene from "Beauty and the Beast" [37].

Another example is in the movie "The Iron Giant" (1999), it's a traditionally animated film that mixes computer generated imagery, that shows the implementation of a 3D model that interacts with 2D character (Figure 14). This is a similar concept proposed in the thesis project, because the devil was a character specifically built for 3D, to maintain his geometric and rigid form, as well as to convey the idea of something alien and unknown, just like the giant in the movie [38].



Figure 14 - The 3D iron giant holding the 2D character [39].

The next relevant work is called "Village of Idiots" (1999), a short-film based on a Jewish folk tale from Chelm [40]. A cut-out style animation, that also implemented traditionally hand-drawn characters and real imagery, this film used a creative concept in regards to the art style, the plot involves a character leaving his hometown, fully detailed and painted, as he arrives to a new village he finds out that it looks exactly the

same, but somehow different, since the art style only shows the outlines of the town, serving to display the concept of a familiar but strange environment in the eyes of the character (Figure 15). The project has a similar idea of removing details from the world, in this case, the background in the animation is fully colored, until the world shifts turning everything to white with grey outlines in each edge of geometry, giving the same impression of a familiar space that has been altered.



Figure 15 – Frames highlighting each style from the short-film [40].

One more example is the TV show called “Code Lyoko” from 2003, which had the innovative idea of mixing each medium for narrative reasons, the series took place in two different worlds, the real one was traditionally drawn and animated in 2D but the digital world was fully 3D (Figure 16). This gave meaning to the techniques used and aided in the development of the narrative, likewise the idea of stepping into different worlds by using different techniques also applies in the story plot of the animation project. Starting with a full 2D animated character and background but in the pivotal point where the protagonist and antagonist meet, the environment will switch to 3D.



Figure 16 - Example of both 2D and 3D techniques used on the show.

Concluding with the movie “Spider-Man: Into the spider-verse” (2018), a film that broke the mold of CG animation, separating itself from the standardized productions of 3D animation set by Pixar and Disney. The movie achieved its own style by embracing the old hand drawn aesthetic of comic books, with 2D line work and effects, bold graphics, thought balloons, printed words and even making the 3D characters hang on a key pose for a long duration (Figure 17) [41]. Likewise, the film applied another technique from the traditional methods of 2D animation, the use of different frame rates. A technique that was also applied on the project, the original consensus was to reduce the amount of drawings required in the traditional ways, but in the case of the movie, it is used for stylized means, displaying different speeds between characters, creating abrupt or smoother movements between scenes. A good example of modern hybrid animation that was inspired by the old styles and methods, creating something original and fresh.



Figure 17 – Snippet from the movie “Spider-Man: Into the spider-verse” [41].

III. Proposal

III.1. Contributions

The project presents two types of contributions, the first one can be associated with the artistic nature and process of an animated work. The thesis itself can be considered as something new in the Master of Interactive Media Design, breaking down the theoretical processes of animation but also the artistic vision and decisions that fuel the project. Likewise, the paper itself can be used as a guide for any aspiring animators and small independent teams, relaying the basics of animation. Being 3D or 2D, the project reveals all the steps and considerations needed for each, going step by step on the production and techniques used for the creation of a hybrid animation.

The second contribution comes from the socio-cultural aspects of recreating a folklore tale in a different media. Folk tales display the nuances of a culture, which can be used to educate and transmit cultural knowledge throughout the generations. On the other hand, most folklore tales are preserved in literature, running the risk of disappearing, due to the disinterest of this media in today's young generation, ever evolving with technology.

Adapting any folklore tale into a video format helps to improve the story telling aspect, by showing how the characters and environments can look and how each action can be represented visually. At the same time, allowing artists to experiment with different techniques and be more creative, producing something new, however, it's important to notice that a video format can limit the viewers' interpretation of the original story, or even run the risk of mischaracterization of the portrayed culture.

Turning a folklore tale into a short film aims to promote, preserve and illustrate one of the many old stories that originated in Madeira Island. Through animation, most viewers will be interested and invested in the narrative, promoting the cultural knowledge of the spectator, and progressing cultural preservation. However, since the story is local and unknown, in a global sense, the viewer can lose interest, misunderstand cultural references, create a wrong interpretation of the culture, and even dislike the art style [2]. Nonetheless, the story picked for the animation was specifically chosen for its familiar tale of good vs evil, with an art style that respects the culture by utilizing the depictions from the book.

III.2. Story research

The first step in the project was to search for the story, either from online articles or themed books, then with the narrative in mind, determine which techniques could be used to aid in the retelling of the tale. The story was taken from the book “Contos Populares e Lendas das Ilhas da Madeira e do Porto Santo” by José Moutinho (Figure 18) [4].



Figure 18 – Book used for the project [4].

“The fisherman’s fight with the devil”

Story summary:

During midnight, all the boats returned to land, all the fish were caught and ready to be sold for the next day. One man stayed to clean the place, when suddenly everything around him became dark, and in front of him stood a shadowy figure. The man, startled, grabs a knife and asks a question. The figure responded but the man did not hesitate, striking him with the weapon, doing nothing to the figure. The man, shocked, drops the knife and begins punching. The figure, annoyed, decides to strike, ripping flesh and knocking down the fisherman. With his clothes torn, the man removes his shirt, revealing a cross made of dark hair. The figure, seeing that holy symbol, gets startled and runs away, leaving the fisherman speechless after realizing that the dark figure was the devil all along. He then prayed once and went home.

III.3. Concepts, ideas and aesthetics

Being a solo project, several factors promoted the choice of this tale, such as the interesting end, the duration of the tale, the number of characters present, my limitations as an artist and the possibility of mixing techniques.

The tale, depicts a fight between two characters, it's a straightforward dispute between good and evil, a plot that is easily understood if shown in a global sense, focusing on the individuals rather than the setting, conveying the idea of overcoming obstacles, through determination, strength, and faith. The folklore tale was chosen for its captivating action and unusual ending, showcasing, in a peculiar manner, the effects of a holy symbol on an evil figure. At the same time, the story gives glimpses of the local lifestyle and the cultural beliefs, thanks to the depiction of the main character as a fisherman, which was one of the most important professions on the island, and the evil nature of the devil, that used to terrorize the inhabitants.

Folklore tales are in general short stories, resulting in the lack of details, in the case of the tale chosen, missing some descriptions of characters and scenes, which welcomed interpretation and artistic liberty to fill in the gaps, similarly, when it comes to transforming the tale into a video format, the shorter the duration, the easier it is to hold the attention of the audience, and in animation, setting a reasonable time expectation of completing the short film.

Another reason was the number of characters in the story, this is also related with my limitations as a solo artist, choosing a tale with more characters would be a challenging task, especially in animation, as it would take significantly longer to complete the short film, and run the risk of cluttering the screen with too many mediums, confusing the viewers. This tale gave a more appealing reason to implement different techniques, thanks to the representation of two very distinct characters and the idea of shifting moods, the solution was to separate each one into their respective mediums, with one becoming 2D and the other 3D, just like the movie "The Iron Giant".

Using the depictions from the story, the animation and design of each character was defined, one being the "normal" world and the other from a unique dimension, gave the principle for the fisherman to be a 2D character, a traditional character made with a more familiar and traditional animation method, digitally drawn and animated frame by frame, while the devil is the complete opposite, a 3D character, animated with a skeleton, to be portrait as something new and different.

This merging of dimensions also affected the scenery, since the original story alluded that the environment became dark when the devil appeared, the idea of simply changing a light level to set the mood was not interesting enough, resulting in the idea of switching a 2D environment to a 3D one and removing the color of the world. The concept was to use the 2D background and fisherman as the normal dimension, until the devil appears, switching to his colorless 3D world. This was another reason for allocating the devil to 3D, since most of the action occurred in his realm, the idea was to save line mileage by having a fully built 3D scenario, removing the need to draw a different background for each individual scene, while allowing for more complex shots by placing and moving the camera freely. Going for a more minimalistic look, the 3D environment is painted all white with the outlines of geometry colored in grey, this aesthetic functions to focus more on the characters and their fight, while following the same style as the 2D colored version (Figure 19).

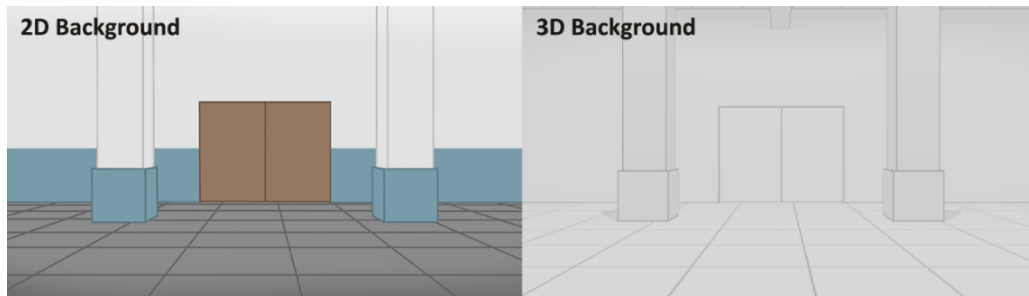


Figure 19 – Example of both backgrounds.

III.4. Narrative structure

Since the narrative in the animation uses the folklore tale as a base, it's important to respect the original story, but change some parts to make the plot more interesting, due to the lack of details written in the book and the possibility of the ending being anticlimactic to some.

The tale follows a linear narrative, beginning with the introduction of characters, conflict and then resolution, although it lacked a character arc, which forced the animation into two possible genres, the first one a comedy, which was quickly rejected, due to the possibility of jokes not landing, and the second a thriller-action, which seemed more fitting with the idea of building up tension in the beginning, then a fight for survival, and ending with the demise of the devil (Table 1).

Narrative breakdown	
Book	Animation
Midnight	Midnight
Ships and fish all stored	The fisherman was cutting a fish
The fisherman was cleaning the space	Hears a sound, goes to check
The world darkens	Lights break
Devil appears	Devil appears, world shifts from 2D to 3D
Fisherman grabs a knife and asks a question	Fisherman backs up and grabs a knife
Devil responds	Standoff
Fisherman attacks, does not harm the figure	Fisherman attacks, does not harm the figure
Fisherman drops the knife and starts punching	Fisherman drops the knife and goes for a punch
Devil attacks with his claws	Devil attacks with his claws
Fisherman backs up, removes shirt	Fisherman gets thrown into a wall
Rips shirt, shows the cross made of hair	Rips shirt, shows a tattoo of a cross
Devil flees	Devil dies, drops his hat, world goes back to 2D
Fisherman prays and goes home	Fisherman grabs the hat, throws it in the trash and goes home

-World is 2D
 -World is 3D

Table 1 – Narrative breakdown between the book and animation.

This narrative almost aligns with the adaptation of the hero's journey by Christopher Vogler (Figure 20), a generalized model that displays the narrative patterns of stories that involve heroes [42]. In the case of the narrative chosen; the "ordinary world" is when the main character gets introduced, displaying the environments and some of his personal history, then the "call to adventure" begins, when the protagonist hears a sound and goes to check, there is no "refusal of the call" and no "meeting the mentor" stages, going straight to "crossing the threshold", when both character meet, shifting the ordinary 2D world to the special 3D realm, where the next stage begins with the "tests, allies and enemies", here the protagonist understands who the antagonist is, then ensues the "approach" stage, when the fisherman begins the fight, and gets knocked down by the attack of the devil, going to the "ordeal" step, when the main character removes his shirt exposing the main weakness of the devil, proceeding to the "reward" stage, when the devil dies, returning the world back to normal in the "road back" step, skipping the "resurrection" phase, and ending with the "return with elixir", as the fisherman decides to go home.

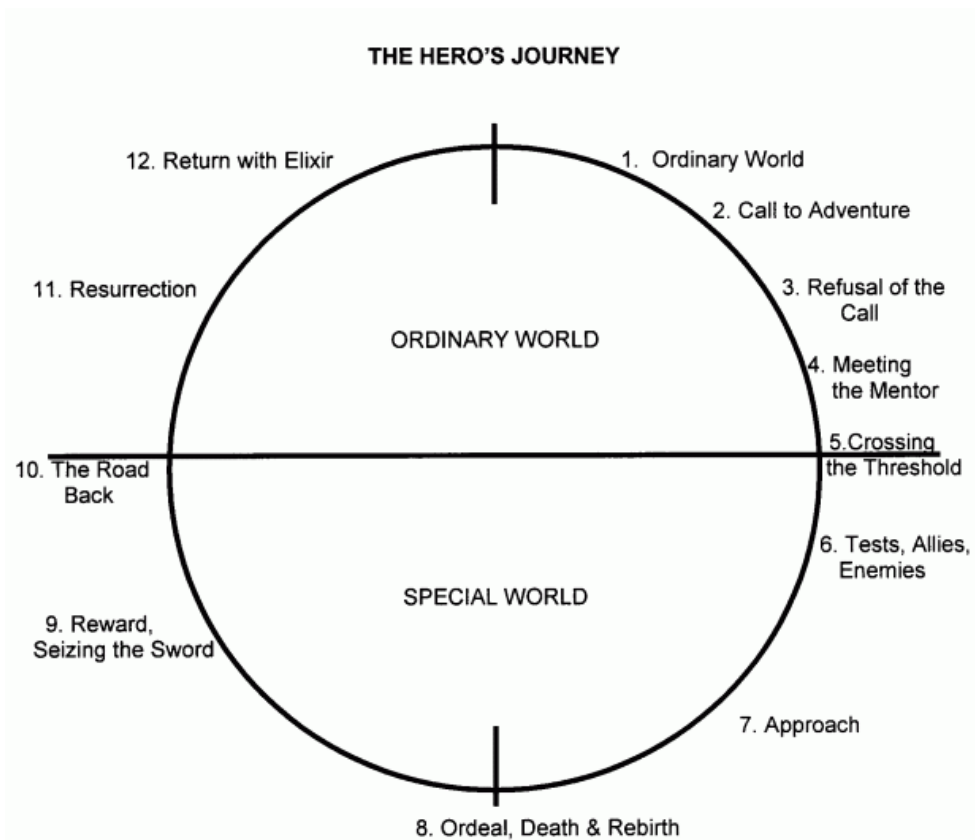


Figure 20 - Vogler adaptation of the hero's journey [42].

III.5. Target audience

If any work is to be shown internationally, it's essential that the themes present are clear and familiar to the viewers. When using a folklore tale as a basis, something that is heavily culturally specific, it's crucial to keep in mind the age, values, and experience of the spectators during the creation of the animation [8]. As previously stated, the tale chosen evokes the well know narrative of good vs evil, the fisherman against the devil, an easily understood plot, due to the general understanding that the devil is the antagonist, likewise, the animation does not use any culturally specific references, besides the traditional music at the start, and does not include any dialogue, since it would limit the potential for worldwide viewers.

Similarly, choosing to make a thriller-action animation, also affects the age range needed to see the work, thanks to the themes of violence, blood and religion, the animation is aimed for teens and up.

IV. Methodology

This chapter serves to showcase the full methodology of the project, divided in three different production phases, pre-production, production, and post-production, breaking down the creation of the full hybrid animation (Figure 21).

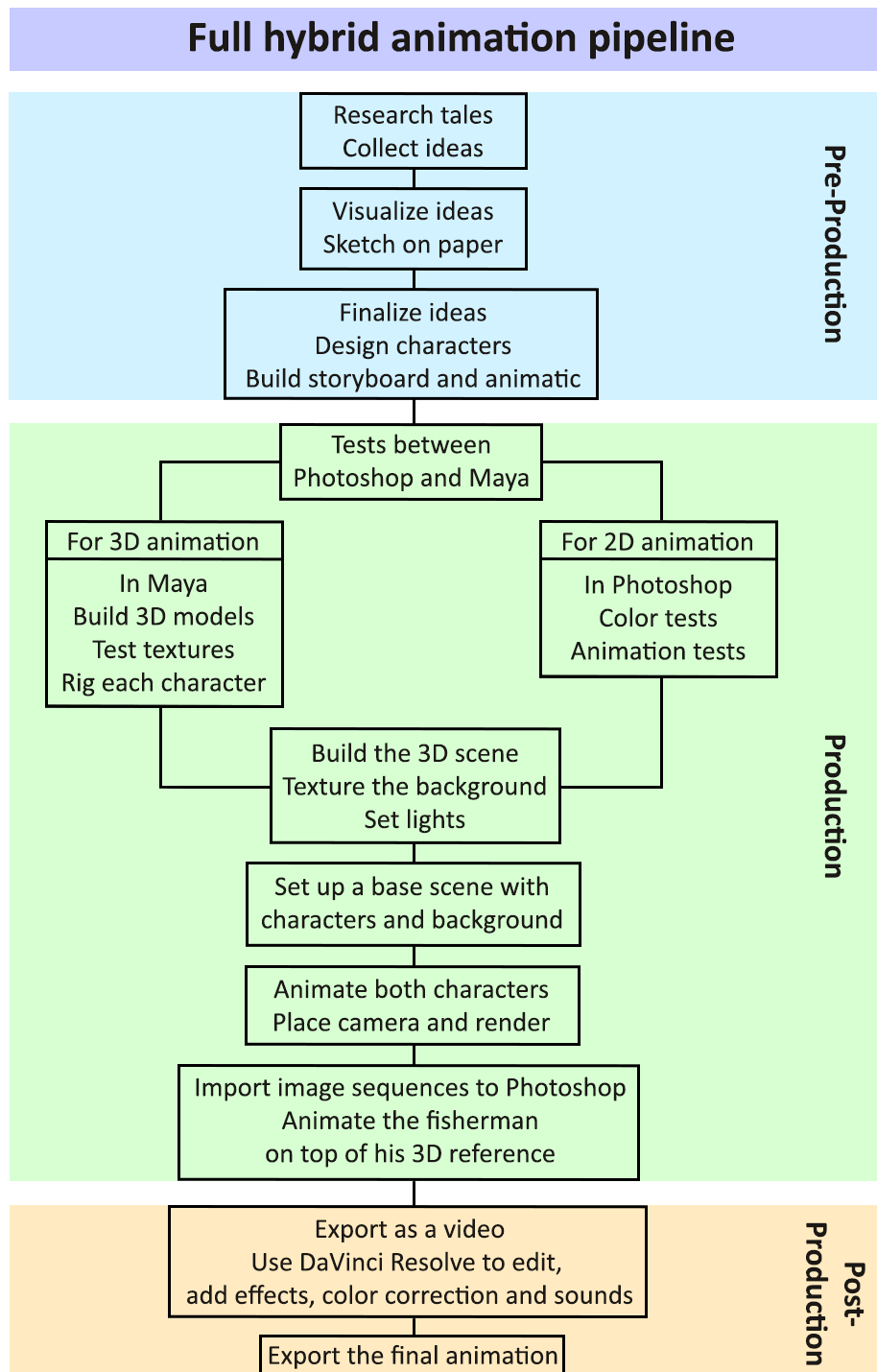


Figure 21 – Graph of the entire hybrid animation pipeline.

IV1. Pre-production

Pre-production is the first stage in constructing an animated work, the vital planning stage, where all the concepts and ideas are laid out into something more material and visual, involving all the necessary activities before producing any finalized animation [8]. In the case of this project, the pre-production begins with extracting all the concepts and ideas, shown in the proposal chapter, to design and illustrate each character and draw the storyboard and animatic.

IV.1.1. Character Design

The story did not go into much detail about the appearances of both characters, giving way to creative liberty. Each design was based on the few descriptions from the tale (Table 2), with additional elements based on real life references and cartoons, to complete the characters. The goal was to draw both in a modern style, with appeal and line mileage in mind, with a straightforward look that makes them easily and instantly recognizable.

Descriptions from the tale	
Fisherman	Devil
<ul style="list-style-type: none">• <i>“O homem trabalhava bem ...”</i>• <i>“... despir a camisola ...”</i>• <i>“... forte peito de remador ...”</i>	<ul style="list-style-type: none">• <i>“... outro homem trajado de escuro...”</i>• <i>“Um fantasma? O demo?”</i>• <i>“... as garras do inimigo ...”</i>

Table 2 – List of character description from the tale.

Going only with the knowledge of the profession, the protagonist has the identifiable appearance of a fisherman, created by representing the overall look that comes with the job, a burly bearded man wearing a beanie with a blue sweater and black rubber boots, essentially creating an “icon” of the profession [5].

His general shape was designed for 2D, with the focus on the top part of his body, meaning that the character has enlarged arms, hands, and chest, opposed to his small head and legs, contrasting his strong upper body appeal, additionally his general rounded form serves to give the sense of something natural, soft, curved and especially human, imparting the idea of a familiar and known character.

On the other hand, the devil was designed to be the complete opposite of the fisherman, planned for 3D, since his geometric shapes would not translate well in 2D. The devil in the tale is described as a man fully dressed in black, leading the design of the antagonist to be a dark figure, wearing a black high collar jacket and a top hat with floating red eyes, all serving to emphasize the ghostly and malicious aesthetic, likewise,

his geometric form can be associated with something more unnatural, sharp, and dangerous, a polar opposite to the fisherman.

During the pre-production phase, each character design is taken to various processes, the first involves a quick rough sketch, based on the first interpretations from the tale, serving as the foundation for the rest of the character development. With the approval from the supervisors, each design is developed further, with a more fleshed out art style and a stronger knowledge of animation (Figure 22).



Figure 22 – First concepts art of both characters.

The fisherman, being mainly a 2D character, needs to be displayed on a character sheet (Figure 23), this helps to show the overall shape of the character in various perspectives, in this case, the protagonist is drawn in a frontal view, a 3/4 view and a side profile view, all serving as a guiding reference before the animation. The sheet also included some of the character's expressions, in this case a neutral and an angry expression, that mainly came from bending the character's beanie, in essence acting as the characters eyebrows.

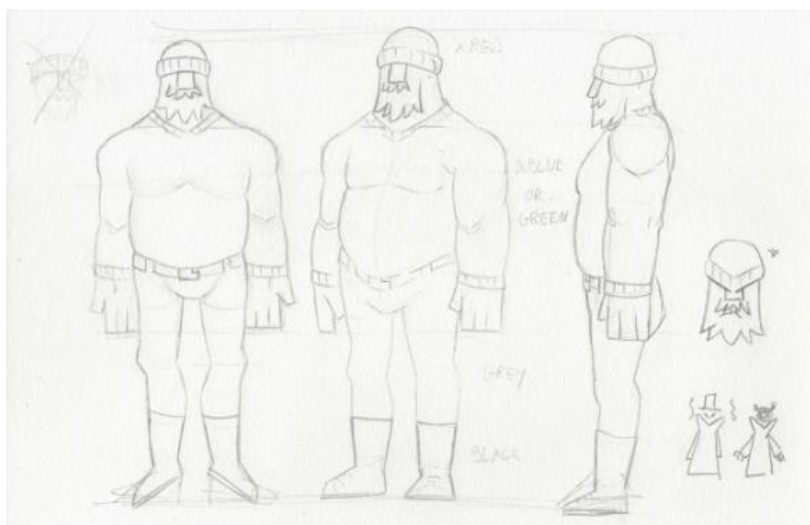


Figure 23 – Drawn character sheet.

On the other hand, the devil being a 3D character, excludes the use of a character sheet, since his shape does not change in any perspective, and all of his expressions can be easily shown by rotating his semi circled eyes (Figure 24).

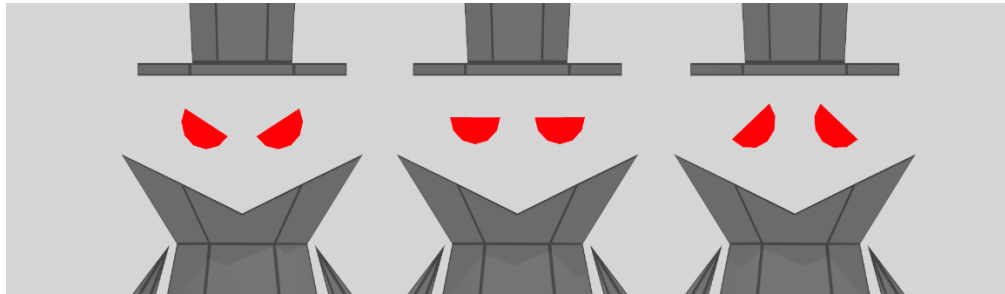


Figure 24 – Range of emotions of the devil.

IV1.2. Storyboard

After choosing the tale and establishing the initial concepts, the next step in the pre-production phase begins with breaking down the narrative, turning the written story into images with a storyboard. In general, storyboards consist of sequences of drawings that visually detail all the key events, displaying in each box, the characters' actions, scene changes and camera movements, with each box accompanied by notes or elements from the script, that describe the action, showing the number of each scene and shot (Figure 25) [43].

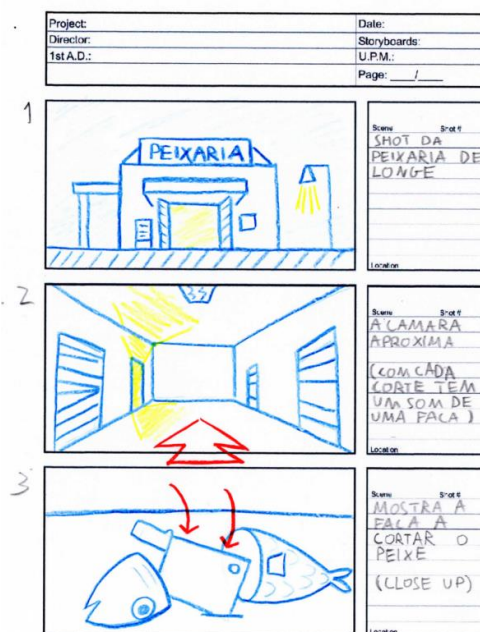


Figure 25 – Example of the template used for the storyboard.

The project's storyboard stayed faithful with the original narrative of the folklore tale, only editing the environment and the initial action. Since the original story did not disclose any details about the background, the solution was to use interpretation from the few context clues present in the tale, like "one of the fishermen would stay there to clean up", and presumed that it took place inside an urban environment, in this case, inside a fishery. Another change was in the beginning of the tale, instead of showing the fisherman cleaning the place, the character was still cutting a fish, the initial concept was to build up the tension right at the start of the action-thriller animation, and in addition, to use the cutting sounds as transitions between the beginning shots.

In the storyboard (Figure 26), the animation begins outside the building with a camera going through the fishery, cutting suddenly to a shot of the fisherman slicing a fish, then hearing a sound in the distance, and going out of frame to check the disturbance. The next frame shows the character traversing a corridor with the devil stalking from afar. Switching to a point of view shot, the main character walks closer to the source of the noise, suddenly the world shifts, and in front of him, stands a dark figure. The protagonist gets startled and grabs a knife, showing a western standoff shot. The next frames showcase the dialogue between characters, switching shots when each one speaks, then cutting suddenly with the attack of the fisherman. Another scene shows a close-up shot of the reaction of the main character after realizing that the attack did not harm the figure. Using another close-up frame, the fisherman drops the knife and starts punching the devil, until the shot switches to the claws striking the protagonist. Nearing the end, the following shots show the protagonist recoiling after the attack, and removing his shirt with a close-up shot of the cross on his chest, ending the animation with the reaction of the devil, running away, and the fisherman going out of frame.



Figure 26 –Each frame from the storyboard.

IV.1.3. Animatic

The animatic provides a sense of how the finished work will look, reflecting accurately the run time and pacing of each shot in the film, if any action seems too slow or any scenes are hard to follow, they can be edited prior to the production phase. The animatic from the project was an upgrade from the initial storyboard, with more thought-out scenes, resembling more to the final animation. Most of the shots were revamped to give more context in each scene, drawing more frames to create a natural transition between the shots (Figure 27).

Additionally, the narrative from the animatic differed from the original storyboard in two ways, the first one involved the removal of the dialogue part, in order to include a wider audience, and the second, the decision to kill the devil in the end, since the idea of running away could be perceived as a comedic ending or even seem anticlimactic and unsatisfactory to potential viewers.

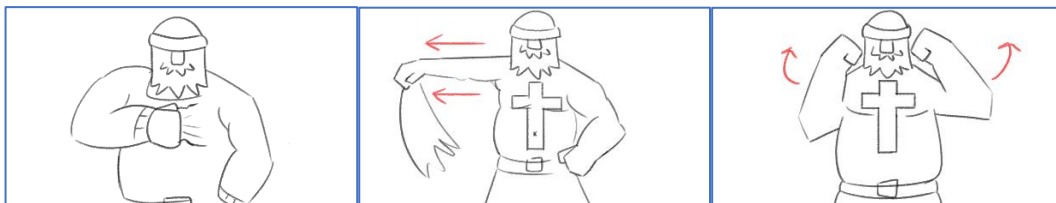


Figure 27 – Example of a sequence used in the animatic.

IV.2. Production

The production of any animated work differs between the mediums and techniques chosen by the artists, in the case of this project, the production begins with first testing the programs, specifically chosen for the interdisciplinary techniques and familiarity, learning the process and potential issues that surge when merging 3D renders with 2D drawn images.

IV.2.1. Merging tests

As stated earlier, various tests were conducted between the chosen programs, Photoshop and Maya, these early tests served as proof of concept since the merging of 3D and 2D assets was something new that I had never tested prior to the project.

The first test involved the exportation of one single render from Maya and taking it to Photoshop to be drawn on top, the test boiled down to creating a background in Maya, in this case a 3D scenario with some cubes, then exporting a single rendered frame to Photoshop, to draw a 2D animation on top, this proved early that both programs could work together (Figure 28).



Figure 28 – First merging test between Maya and Photoshop.

Ongoing tests showed that when Maya renders more than one frame, each image can be placed on a designated folder, opening said folder on Photoshop and selecting the first frame and then the image sequence option, will automatically create a layer with all the renders as a full video, that then is shown in a timeline, that allows to set the frame rate, cut the clip and draw on top of it by simply creating a layer that is placed higher than the video layer (Figure 29).

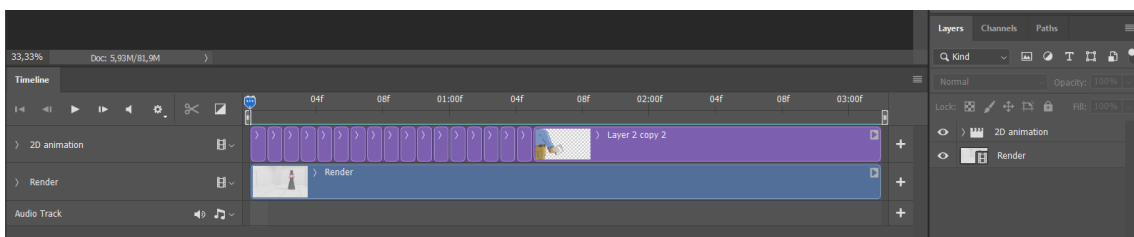


Figure 29 – Timeline in Photoshop with the rendered 3D on the lower layer and drawings on top.

Various obstacles surged when merging 3D assets with 2D drawings, opting to use Maya first and then Photoshop, the first relevant problem was the 3D camera, if at any point the camera needed to move, pan or tilt in the 3D scene, the main issue came from drawing the 2D character in the moving 3D environment. The solution was to create

a reference model that acts as a guiding point, notifying me of any changes in perspective, removing the possibility of making the character look as if he is floating in the space.

Another issue was in any 3D object that needed to obscure a 2D drawing, to achieve this effect, two possible methods surged. The first solution involves the presence of a static camera, if the occluding object has a simple shape and never moves, the techniques relies on manually cutting out the rendered object in Photoshop, and then placing it on a layer above the 2D drawing that needs to be occluded. The second method, is applied when the 3D camera is moving, in Maya, the background and the occluding object need to be rendered separately, since the camera is always replaying the exact same movements, the separate object always fits accordingly with the other render, meaning that when taking both renders to Photoshop, each one stays on a separate video layer, while any 2D character or objects can be drawn in between the two, automatically inserting itself in the 3D scene while being obstructed by a 3D object.

Taking a 2D animation from Photoshop to Maya showed a more complicated process, in regards to camera movement. As stated before, the medium that's in majority leads the other, and since most of the scenes involve an entire 3D background with a 2D character inside, the concept of trying to animate the character first and then match it to a stationary or moving 3D camera, would be difficult and extremely inefficient. On the other hand, when it came to obstruct any 2D object or characters in Maya, the process was simpler, any animation done in Photoshop can be exported onto an image plane that is present on the 3D environment (Figure 30), not needing extra steps to obstruct the image, but its important to notice that the high resolution used for the 2D drawing still presented some pixelation in the outlines, cementing the choice to use Maya first then Photoshop.



Figure 30 – Render of the character as an image plane in Maya.

IV.2.2. Techniques

The methods chosen for the animation were based on known techniques and programs learned throughout university, determined by my experience as an artist, and the availability of the tools and mediums, that would correlate well with the narrative created for the animation.

One major decision was to exclude any real-life imagery, due to various reasons; the need to request expensive equipment, like lights, tripods and cameras, being a solo project that would cost time to set up, also, any real scene in a public place could require a film permit and cost additional time to travel, furthermore, several variables could ruin a recording like time of day, climate and camera focus, requiring to record all over again. Removing the use of a real camera also eliminated some animation techniques, like stop-motion, which encompasses 2D cut-outs and 3D claymation, both methods that require considerable amounts of skill and time, knowing that if any mistake were to occur during the capturing process, these techniques could not offer the ability to re-edit any frame, unlike the familiar programs that I learned during my education.

Another excluded technique was the use of motion capture animation, the main reason was the unconventional shape of the characters, both having original designs that do not follow a normal human form, meaning that importing any animation from mixamo or similar sites, becomes a problematic process, requiring many adjustments to achieve the intended movements, making it a harder process than animating from scratch.

For the 2D animation, three techniques were used, the first one is traditional but digital animation (Figure 31), the method of drawing frame by frame, using both straight ahead and pose-to-pose techniques. This method was preferred due to my familiarity with the process, but also to give a more classic look to the movements, using traditional animation for a traditional character. Choosing to go fully digital instead of drawing on paper, comes down to optimizing time, by eliminating the tedious scanning process, and reducing costs, by removing the need to buy paper and other materials, going digital only requires a tablet and a computer with the chosen illustration program.

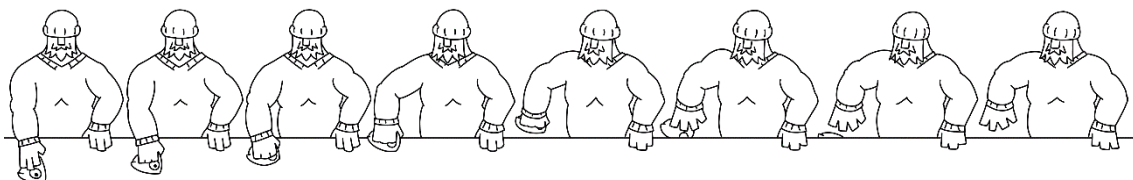


Figure 31 – Frames from the first traditional animation test.

The second technique was rotoscoping, normally associated with tracing over real actors, the project used the same process but with a twist, the 2D character was drawn on top of an animated 3D version of himself (Figure 32). This served as a reference in the 3D space, just like in “Beauty and the Beast”, but taken a step further, with a simple 3D model of the 2D character that is fully rigged and animated. This option helped to speed up the 2D animation process, by tracing over each movement, timing perfectly the interactions between characters, and helping to maintain the consistent form of the fisherman in all different perspectives.

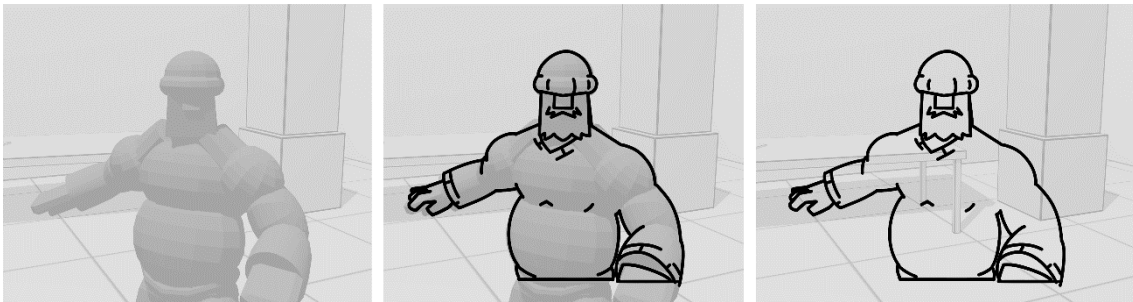


Figure 32 – Images of the rotoscoping process.

The final technique was vector motion animation, which was applied when any 2D object needed to move in a constant linear movement, this method relies on converting any layer into a smart object, this essentially transforms any drawing into a vector based image that never loses quality when altering its size, which also unlocks the ability to animate a single drawn frame, making it possible to rotate, and move from one point to another using keyframes (Figure 33), providing a much faster animation process than drawing each frame.

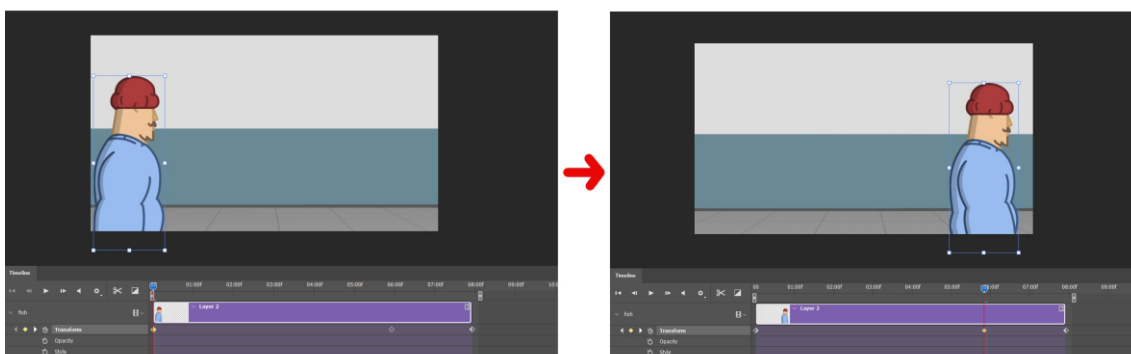


Figure 33 – Example of a vector based animation in Photoshop.

As for the 3D characters, both were planned to be animated manually with forward kinematics, the method of moving each joint of the rigged 3D model, placing keyframes between the starting pose and the final pose, letting the program interpolate

the full movement between them (Figure 34). This method was also used in conjunction with inverse kinematics, in one particular scene, helped to pin down the feet of the fisherman and automatically bend the knees as the main body moved. These techniques were picked instead of motion capture, due to the freedom and full control of the movements, and as stated above, the known factor of the time consuming and difficult process of fitting an animation into a skeleton that does not have typical humanoid proportions, making the manual skeleton animation the best option for the 3D animation portion of the project.

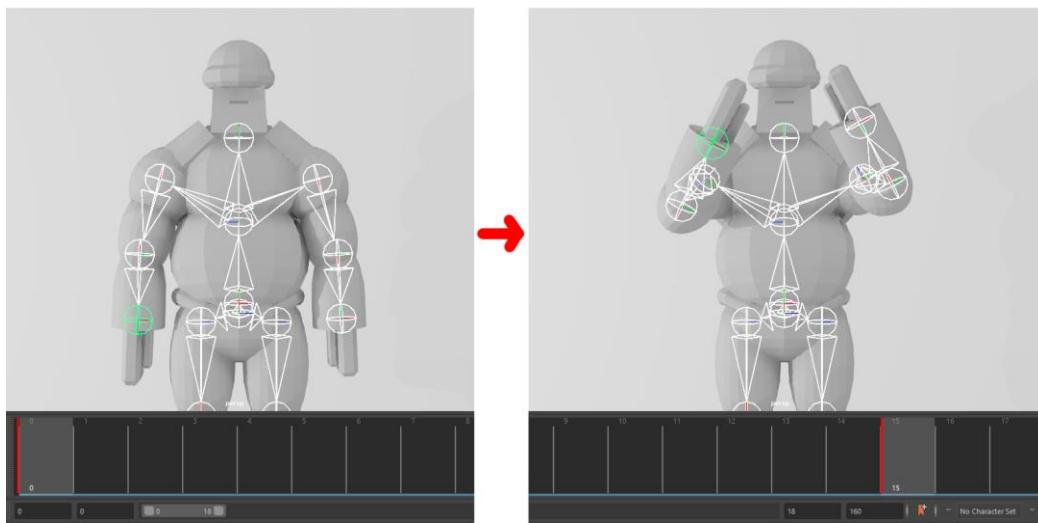


Figure 34 – Example of keyframing each pose.

IV.2.3. Production pipeline

Given the fact that 3D leads the production, the characters and background must be built first before any 2D part of the project. Both characters were built in Maya, the devil, and the reference model of the fisherman, which helped to hammer down the right proportions between them. The character-building process starts by placing an image plane with the drawings of both characters, each one built with low poly shapes (Figure 35). The devil was composed of hexagonal pyramids with each bendable part closed with a semicircle to maintain the outline of the character as he bends in any direction (Figure 36), while the fisherman was made with spherical shapes, transformed to match the drawing.

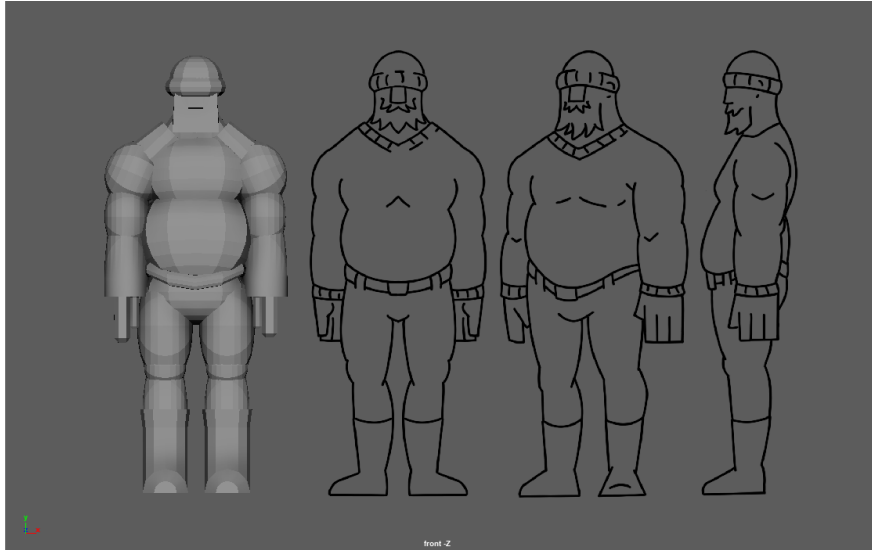


Figure 35 – Demonstration of the image plane used to build the model.

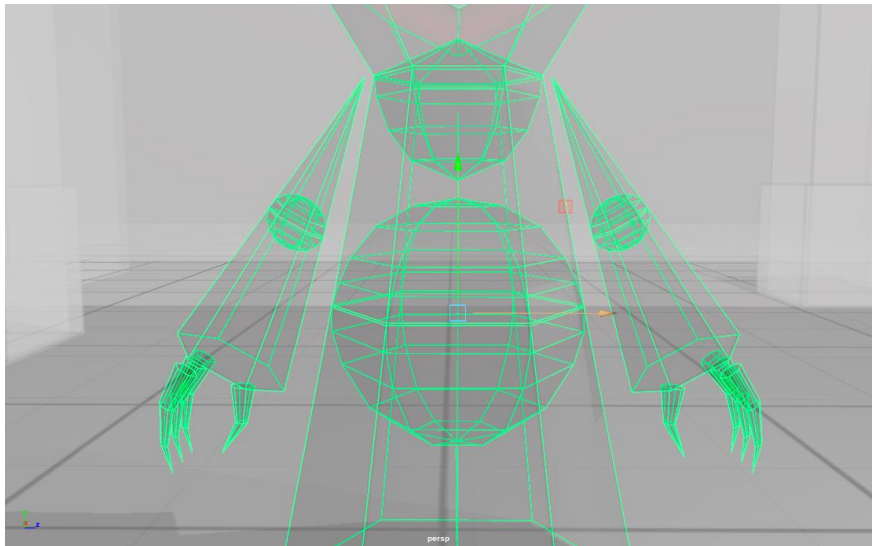


Figure 36 – Demonstration of the semicircles in each bend.

Texturing was the next step, in Maya any 3D object has its own UV map, a two-dimensional plane that can display any texture inside the polygons of the object (Figure 37). All textures used for the project were made by exporting the UV map to Photoshop, this is possible by first selecting the untextured object or character and going to the UV editor to snapshot the map, it's important to notice that some objects can have overlapping UV's, in which case they need to be separated and rearranged accordingly. After importing the UV snapshot to Photoshop, any drawing made inside the map will be later projected onto the model, in the case of the devil, the hat and each section of the body were painted grey with dark outlines in each corner of the geometry, while the eyes and fingers maintained a solid color with no outlines. On the other hand, the 3D model of the fisherman did not require to be textured, since it functions as a reference model.

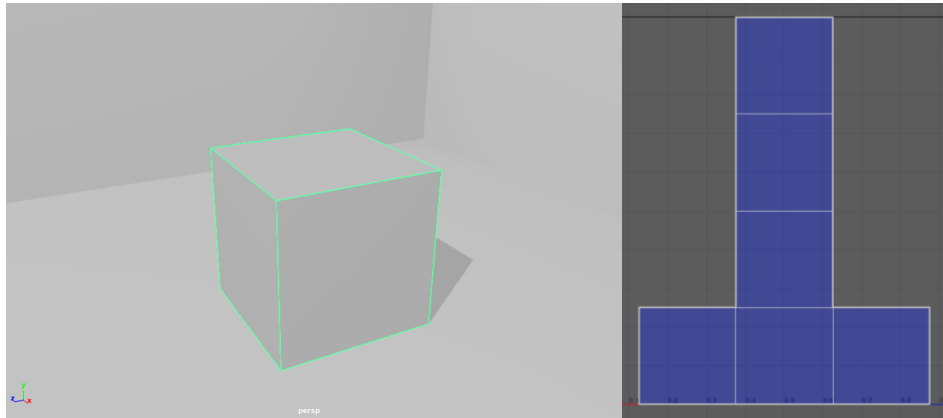


Figure 37 – Standard UV map of a cube.

Going back to Maya, the untextured object has a material assigned to it, in this case a blinn shader (Figure 38), which gives the option to color the object, adding a gloss or matte effect if needed, but for the context of the project, the base color of the blinn is switched to a Photoshop file, automatically importing the created texture to the assigned 3D object (Figure 39) [8], [44], [45].

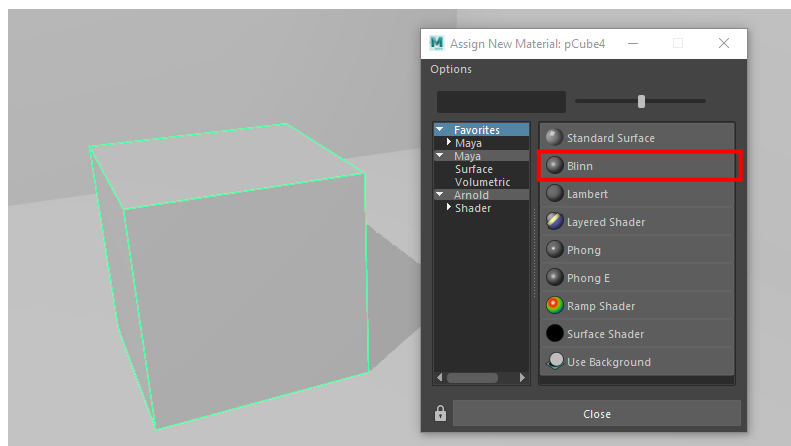


Figure 38 – Example of assigning a blinn shader to an untextured cube.

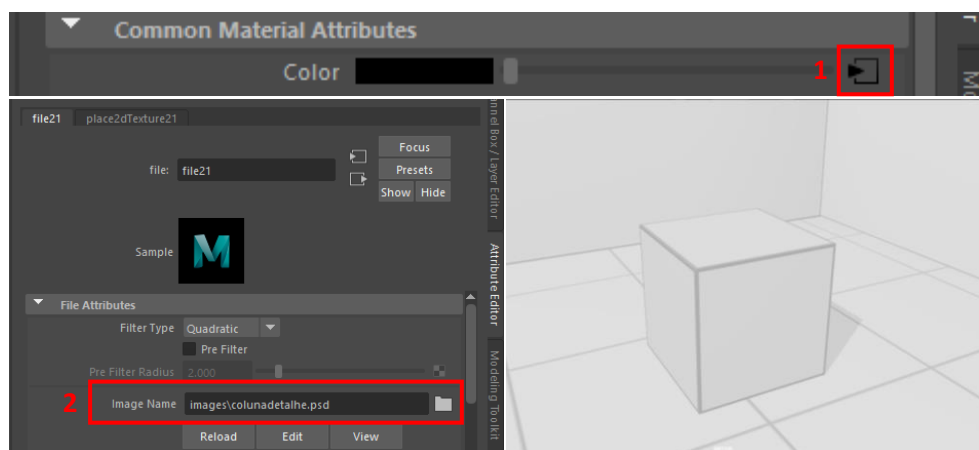


Figure 39 – Process of assigning a file as a color value of the blinn shader.

With each character built and textured, the rigging process starts by using the side perspective view to place the joints that act as the spine of the characters, then in a front view, the arm and leg joints are placed accordingly and attached to the spine, it's important to notice the order in which the joints are placed, since they must follow a hierarchy, in this case the highest joint in the chain is placed on the pelvic region, where all the other joints will develop from, having less influence on the others as they go down the hierarchy.

With the skeleton fully built, each bone gets parented to the mesh of the model, using the constrain and parent options, making the joint control the selected mesh, then repeating the process for each body part until ending up with a fully rigged character (Figure 40).

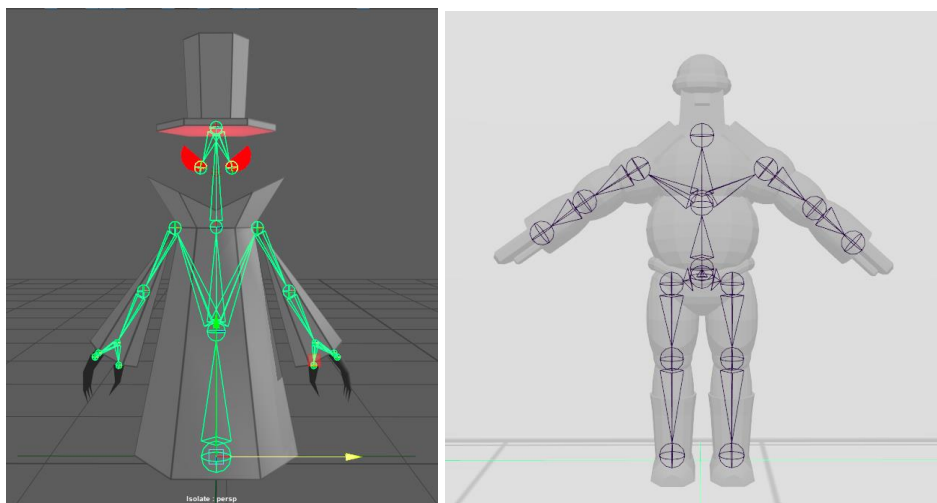


Figure 40 – Characters rigged skeletons.

The 3D environment was fully built from scratch, using cubes and planes, trying to resemble one part of the fishery, shaped as a large room with four columns on each side, with two opposing doors. Then textured with the same method as explained before, painted white with grey lines in each vertex of the object, to simulate the outline style of the 2D backgrounds drawn for the beginning of the animation.

Building a 3D scenery also requires lights, in this case two types of lighting were used, an ambient light to light up the entire scene and an area light on the ceiling, to act as the actual lights from the building.

Having the complete environment, as well as the lights and characters built in Maya, the staging process begins with preparing a base scene with everything in position. Placing and animating each character accordingly to the animatic and using a 3D camera to render each scene twice, one with the 3D reference and one without, then taking the image sequences to Photoshop to draw the 2D fisherman on top of his 3D model, rotoscoping, drawing frame by frame, and in some cases using vector motion. Concluding the production chapter of the short film with exporting each animated scene (Figure 41).

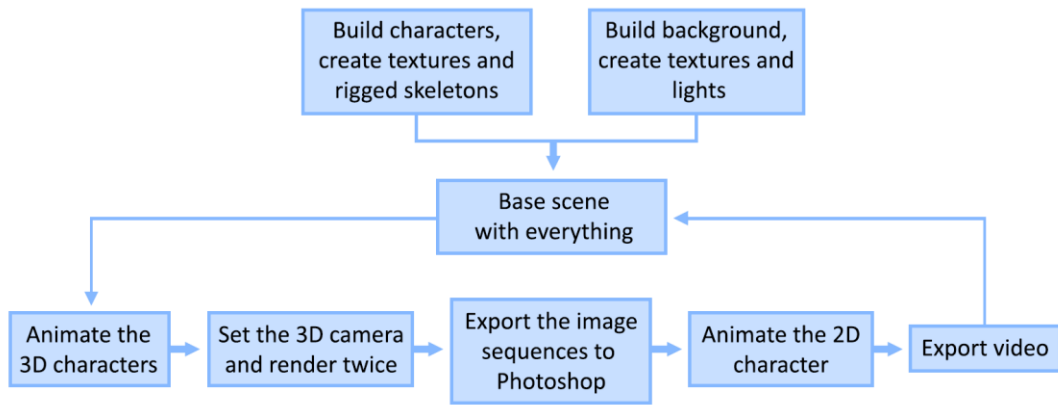

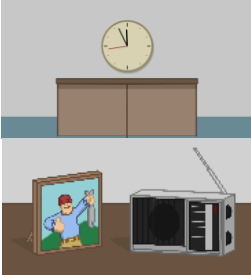






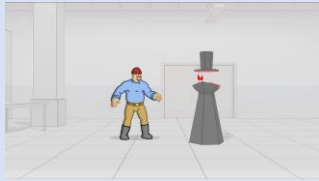



Figure 41 – Graph of the production process used for the project.






IV.2.4. Scene breakdown

For the context of the report, a table was created to break down the relevant scenes that needed further explanation, due to extra procedures used during the production phase of the animation, giving general knowledge about the process and the tools used. Being an animation, something that is grounded in imagery, each row has a complementary frame, since trying to explain the process without any reference would be especially difficult, hence the creation of the table (Table 3).

Scenes	Process
	<p>Fully drawn in Photoshop, the first scene serves to present the setting and art style of the full animation. A mask was created to isolate the gap below the door, where a drawing moves from left to right using keyframes, obscuring the lower layer of the drawn lights.</p>
	<p>Both scenes served to understand the current time and the profession of the character. Any illustration done in photoshop starts with drawing the outlines first, then in a lower layer, the full color. Any shadows drawn on the 2D character are essentially a copy of his full shape, painted black with a low opacity, erasing any part will reveal the real color, giving the impression of the bright parts on the character.</p>

	<p>First instance of smart objects, any layer converted into a smart object creates a separate file, where only the converted drawing appears, any change done in the separate file affects the original converted layer. This allowed to draw and animate any character on a separate file, helping to move an entire animation in the original file, instead of selecting each frame, making the animation timeline less cluttered and more efficient.</p> <p>Converting any layer into a smart object also maintains the quality of the drawing as it scales up or down, trying to scale anything that is not a smart object makes any drawing lose resolution, this was mainly used for the blood splatter effect, since it starts really small and expands rapidly.</p>
	<p>First scene that used rotoscoping, in Maya, the 3D reference of the fisherman is animated and then rendered into separate images, which then get imported to Photoshop as image sequences, that automatically play the rendered animation. Then the rotoscoping can begin by retracing the 3D model, drawing the outlines first, frame by frame, then coloring the inside.</p> <p>Any other visual elements, like the wall, can be placed on a lower layer to appear behind the character or on the top, like the table and the fish, to appear in front of him.</p>
	<p>The entire scene was first animated in Maya, exporting one sequence with the 3D reference and one without. In photoshop, the fisherman was drawn once and converted to a smart object, in the separate file the character moves in a constant up and down motion, with his arms swinging, while in the main layer the fisherman moves horizontally, making the character walk.</p> <p>The walls, each drawn in separate layers, moved horizontally, and at different speeds, to give the idea of depth and distance, in the middle of both layers the full render of the devil and 3D background is placed, appearing and disappearing by keyframing the opacity levels.</p>
	<p>In this scene, the character enters a room with a camera following him from behind, his perspective never changed unlike the background that was in constant movement. To achieve this effect, each section of the 2D environment was on a separate layer, the floor, each wall, ceiling lights and columns, each one converted to a smart object to maintain the quality, but also to scale and conform to the render. The technique consists of scaling and moving each drawing to match the dimensions shown in first frame of the rendered 3D environment, then scaling once again to fit the last frame of the render, keyframing the initial and final transformations, giving the same idea of a moving camera but in the 2D drawn world.</p>

	<p>This scene served to show the transition between environments, switching from 2D to 3D, by changing the opacity levels between the drawn and rendered background. The devil is rendered separately to the 3D scene, making it easier to insert him in the 2D background, and his shadow is actually drawn, copied from a render that included him and the 3D scene.</p> <p>The fisherman and his shadow stayed always on a top layer in relation to both backgrounds, giving the idea that he is grounded, even in the 3D world. It's important to notice that anytime the fisherman stayed still, two drawings were made over each other, flipping between them, to give a more natural animated look and life to the character, even when stationary.</p>
	<p>In this particular scene the 3D camera stayed parented to the reference of the fisherman, meaning that any movement done with the character model, the camera follows, essentially maintaining the same perspective of the fisherman, while the background is in constant change.</p> <p>A new animation shortcut was applied since his perspective never changed, looping animation, which in this case uses the same four drawn frames, that are on a constant seamless loop, until colliding with the table, returning to traditional animation.</p> <p>The 2D knife set in the table, also had a 3D reference, which was used to display the right proportions as the camera moved closer, using the same method of converting the 2D knife into a smart object, the drawn prop is transformed and shaped accordingly to the changes in perspective, with the help of his 3D model.</p>
	<p>This western style shot serves to alert the viewer of the ensuing fight. The scene showcases the full motion of the 3D devil, as he reveals his claws once at a time, besides his hands and floating head, the body and arms maintain a constant form with each bendable section closed with a semi sphere. Taking the image sequences to Photoshop, the animated fisherman stayed, like in most of the scenes, on a top layer in relation to the renders, having the possibility to obstruct the devil, but not the other way, requiring a different method, that was used later on.</p>
	<p>The outlines of the character are always drawn first, which then are converted to a smart object, which helps to color the character and animate him separately to the original file, the character is drawn with his arm segmented in different layers, each section is duplicated and positioned to bend and extend, animating the arm, then finally adding some looping animations on the beard and sleeve to appear waving.</p> <p>Going back to the original file, the animation on the separate file can be played and positioned freely inside the canvas, placing keyframes between the desired compositions, creating a vector motion as the program interpolates the entire movement, essentially using the original file as a 2D camera that is capturing the full animation from a separate file.</p>

	<p>One of the most complex shots in the entire project, where both characters come into contact. This scene contains a camera that rotates in the 3D environment, changing perspectives constantly. In the case of the devil, since 3D the character is present in the scene, perspective changes were not a problem, but a new model and skeleton had to be created, since the character had to be cut in half and then reconstructed.</p> <p>The fisherman was a different story, while still using the 3D reference to rotoscope, a large number of frames were drawn to correspond accordingly with the constant changes in perspective. In all, four renders were imported to photoshop, one with everything, the reference, background and devil, and others that only rendered some parts, in special notice, a solo render of the devil that was used to obstruct the fisherman, by simply placing it on a top layer in Photoshop.</p>
	<p>The shot uses the same process as the knife lunge scene (32-33), converting the drawing to a smart object and animating the character on the separate file. Although the shot only shows the arm that then rises, revealing the rest of the body. For the first part, the solo arm is animated traditionally, drawing various arm positions, while the rest of the body stayed away in a separate layer, that then gets brought in with keyframes, to connect with the rest of the arm.</p> <p>In the original photoshop file, the animation is displayed on the timeline, which then can be moved in its entirety, keyframing each shot, moving the scene through various compositions.</p>
	<p>First solo scene with the manually animated devil, the render was still taken to Photoshop, mainly to add a 2D effect on top, essentially merging two mediums in a new way.</p>
	<p>This scene used a combination of ones and twos. First, when the character is projected into the wall, all the frames run on ones, this served to accentuate the speed, until the character collided with the wall, where the rest of the animation ran on twos.</p> <p>The wind effect used for this scene, was comprised of various pointed spikes, that when copied and flipped between each other, created the effect of a turbulent wind, that helped to emphasize the velocity and violence that was enforced to throw the character, alongside the shockwave and the crater, that remained in the frame.</p>
	<p>The first scene that shows any emotion from the devil, besides angry, his eyes are essentially half circles, that rotating inwards, automatically creates a stronger fuming expression, and rotating outwards, a neutral or sad expression. On the other hand, this shot required a surprised face, which was possible by copying the same eyes and hiding them behind the originals, that then spring forwards, creating a full circle that indicates a surprised emotion.</p>

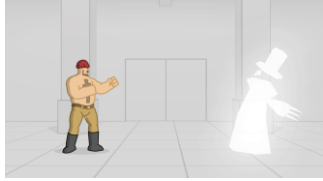


	<p>A similar shot and composition to the changing environment scene, this shot also uses the exact techniques referred before, the shaking animation of the stationary fisherman and the changes in opacity to transition between the 3D built environment and the 2D drawn scene. The relevant feature in this shot comes from the glowing effect on the dying devil, this is possible by rendering the character separately to the 3D background, then in Photoshop, the render is given a layer effect with the outer glow and white color settings.</p>
	<p>The shot inside the trashcan was fully drawn without any 3D reference, using traditional animation for the fingers and vector based motion for the rest of the fisherman's body and head. The hat was copied into two sperate layers, the first one, stayed in his hand, in a lower layer in relation to the green borders of the trash can, but as soon as the character drops it, the other copy that is on a higher layer, appears, fading the scene to black as it zooms in.</p>
	<p>The final scene in the animation, required the use of a 3D scene with the fisherman reference and a fully built trash can, which was also animated to close, then brought to Photoshop to rotoscope the lid.</p>

Table 3 – Breakdown of each relevant scene.

IV.3. Post-production

The post-production process includes everything necessary to get the animated work ready for exhibition. Comprising of video editing, visual effects, sound design and color correction, all serving to enhance the quality of any creative video production.

IV.3.1. Editing

Beginning with editing, all drawn and rendered imagery is exported to DaVinci Resolve, here the program allows to join and cut every single clip, framing and readjusting any composition if necessary [46].

Combining all the labor intensive work in one editing program helps to evaluate the entire flow of the narrative, seeing what works and what can be added or removed, making sure that everything is easy to interpret and understand in the story. In the project, every scene was shown to the supervisors, to report on the work and to listen to feedback, slightly tweaking and removing some assets that did not need to exist, and

other scenes that were completely overhauled, because of potential narrative misunderstandings and immersion.

During the editing process, all the animations are placed on the first video layer, here each one is edited and cut, then joined one by one to readjust the time between them, verifying that each frame is clearly seen, while certifying that everything works accordingly with the flow of the narrative. On the editing program, some static shots were adjusted to move, the first method is a camera pan effect, which is created by increasing the size of the image to fill the entire frame, then dragging it in any direction and keyframing each position, this is used to guide the eyes to look in a specific order and to also improve any scene that could be perceived as unamusing.

The second method was a zoom effect, working also with keyframes, the zoom-out works as a transition effect to first show the characters and then the background, while the zoom-in serves to focus on a specific point in the frame, each one used to enhance the action, making it more engaging to watch.

An additional video layer was created for an adjustment clip, as the name implies, the clip is used to adjust any scene that is on a lower video layer, in the case of the project, the clip encompasses the entire timeline since it's used to create two black borders and a vignette, that all work to enrich the animation, turning it more serious with the vignette and more cinematic with the borders (Figure 42).

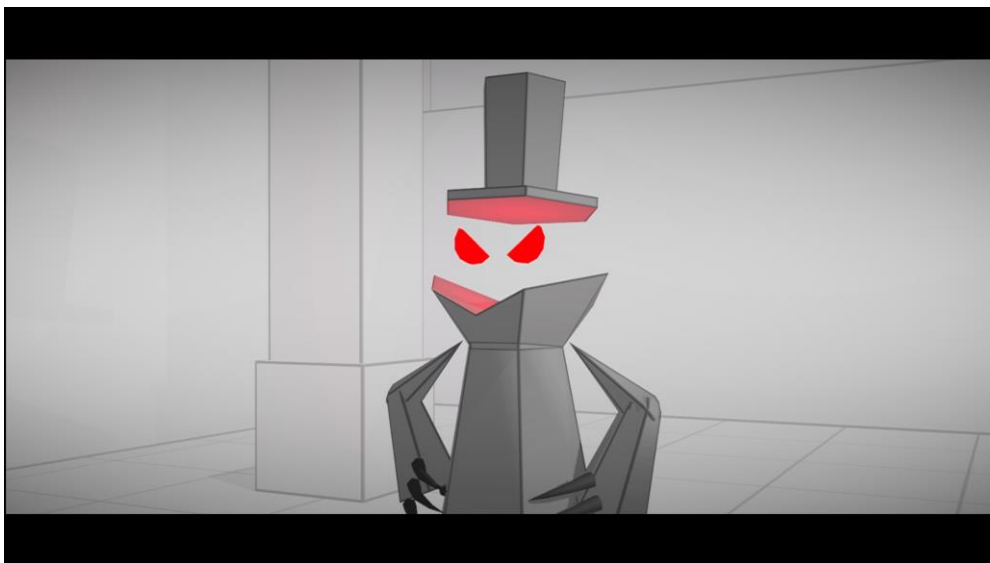


Figure 42 – Demonstration of the borders and vignette.

IV.3.2. Visual effects and color correction

Visual effects are a great way to enhance the animation by adding more depth and visual flair, that can range from subtle to extreme [8].

Prior to exporting the animations to the editing software, some scenes already had visual effects, the first example was a blood splatter effect that spurts out of the fish, blocking the screen in a red tint, this effect is done by first converting the drawn blood into a smart object, this helps to maintain the resolution as the drawing scales up or down in Photoshop, then keyframing both the small and large transformations, resulting in the visual effect of blood on the screen.

The animation also had two distinct wind effects, inspired by Japanese animations, the first effect relies on white and black, blurred lines that animate forwards and backwards in a rapid motion, giving the effect of speed and turbulence, this effect can only be used when any object or character is in a side perspective.

The other wind effect is used when the fisherman is thrown into a wall, since the character is shown in a forwards view, the effect consists of two layers of various centered spikes, that flip between each other, emphasizing the strength and momentum used to throw the individual, similarly, on the same scene, a shockwave effect was created with four circles, each one appearing in a sequence, increasing in size and fading as it dissipates.

The final effect used before the video editing program, was a blur, used to focus more on the foreground elements, like in the first ever scene of the animation, the blurred effect is applied on the drawn background of the fishery, to give the idea of depth of field, another use, was on the fist of the character as he lunges forwards, the blur effect serves to highlight the speed, like the camera could not capture the full movement.

On the editing program, a screen shake effect was applied on an adjustment clip, the clip was positioned on top of any scene that contained collisions or fast movements, either from each character or even background elements, putting the effect on a separate clip helps to readjust and time perfectly without changing the original animation clip.

Another, involved a flickering light effect, this served to alert the viewer of the approaching devil, this effect involves a basic dark filter on an adjustment layer, that only flashes for a seconds, copying the clip with some space makes the original animation flip between the original color and the dark filter. Some scenes prior to the editing software already had a similar effect but the ones present in the program offer the ability to edit on the spot, and later making it more efficient to sink up with the sound by seeing where the adjustment clip is placed.

Then the entire video passes through a color correction process, utilizing specific tools that adjust the color, light levels and contrast of each image. In the animation this step involved slight changes to some scenes, tweaking the levels to highlight the colors of both characters, brightening up the red eyes of the devil and the blue shirt of the fisherman, contrasting them with the white background and other adjustments to some scenes that were too dark or too bright.

IV.3.3. Sound

Sound design is a carefully crafted process that works in a complimentary relationship with animation. For the most part, sound nowadays is recorded digitally, being able to download any original recordings from audio libraries or even record the sounds from scratch, with the help of a handheld recorder, which the project used both methods.

The project used sounds from two different royalty free websites, Pixabay and Epidemic Sound, with a combination of self recorded sounds from a Zoom recorder, provided by the university [47], [48]. Each sound was placed accordingly in the editing program, each one altered to fit in and complement the scenes; changing the volume, depending on how close the characters are on the screen, panning the sound, if a character is on the left side of the screen the sound should project from that direction, adding a muffle effect for distant sounds, like the radio after cutting to the next scene, reverb and echo to demonstrate the depth of the space, like the footsteps on the long corridor, and even “nondiegetic” sound elements, meaning any sound that comes from offscreen, for example, the sounds of the wind, insects and waves in the starting scene [8].

Each character had their respective sounds, for the fisherman, a cloth rustle foley was placed every time he moved, and later switched to a leather tightening foley, to simulate the sound of the muscles and skin as he removes his shirt, it’s important to notice the absence of vocal sounds, like breathing, grunting and panting, these sounds were placed and tested during the post-production process, although quickly removed since it did not align with the artistic vision, even breaking the immersion as the character gasped once, seeming out of place.

The devil originally had a constant static sound, which was also removed, since the sound was unnoticeable, and even with the volume raised, the constant noise combined with the other sounds became annoying and overwhelming, turning any scene into an illegible mess of noises. The solution was to use brief ghostly screams each time the character appeared on screen, with a combination of reverbed, low pitched sounds of cracking wood, all serving to complement the strange and sinister movements of the figure.

The short film is absent in dialogue as to emphasize the audio-visual themes of the animation, to this effect, the music is used to drive the plot and influence the current mood of each scene. Being an action-thriller piece, the music affects the entire pacing of the animation, starting slow and low volume, to build up tension before the fight, and as the action rises the music becomes more powerful and noticeable, until the fight ends.

IV.3.4. Export

Before exporting, the entire video is rewatched in the program to determine if there are any errors on the edit (Figure 43). After reevaluating the video, the choice of render and export surges, the animation was rendered first for YouTube, with the highest resolution 1080p, shown in unlisted mode, meaning that the video can only be seen by those that have the link, chosen for the ease of distribution, making it simpler to send to the supervisors to pause and recheck at their own time. Ending the post-production phase with the completed short film, fully rendered, with sounds, visual effects, and color correction (Figure 44).

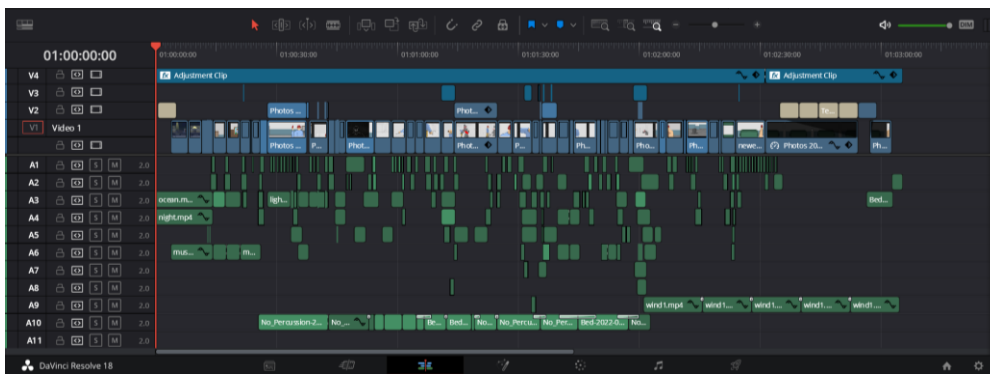


Figure 43 – Example of the entire video timeline.

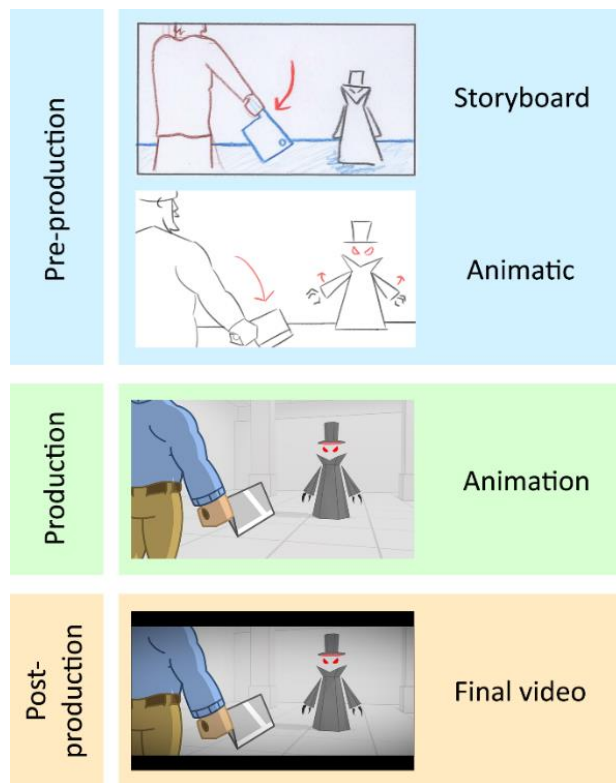


Figure 44 – Frames from each production phase.

IV.3.5. Additional content

After exporting, some additional content was created for the promotion of the short-film. Beginning with a small trailer that has a run time of ten seconds, created to display the opening shots of the animation, with a cliff hanger at the end, accompanied by a soundtrack that emphasizes the thriller action theme of the film, with the goal of leading the viewer to watch the full animation.

Additionally, a poster was designed with the same objectives, intended to resemble one of the main scenes in the short-film, this promotional art went through different concepts (Figure 45), maintaining the same palette with red, black and off-white colors to instantly project the themes of horror and thriller-action movies.



Figure 45 – First concepts of the poster.

V. Results

V.1. Iterations

Each scene from the animation went through iterations, some ranging from small details to entire scene overhauls. It's vital to disclose these changes that improved the narrative and art style of the animation before showcasing the final result.

The final design of the fisherman remained faithful with the character sheet, showcased earlier in the pre-production, although the character went through some style iterations, mainly involving color tests and changes to his outlines. The color tests served to determine the design of the fisherman early in the project, since any colors portrayed in the character can project a different interpretation from the audience, for example, if the character had more grounded colors like browns and greens, the spectators could think that the fisherman was a lumberjack or a farmer. The solution was to use at least one marine color on the character, the light blue on his shirt, that is always predominant in most scenes, serving to resemble the color of the sea but also to contrast with the red eyes of the devil.

The other iteration came from the outlines of the character, originally, the fisherman had a full black outline, resembling the most common color used for animation, although this project took a different approach, depending on the inside color, the outline replicates it with a slightly darker tone, improving the overall design of the character, and helping to distinguish it from the devil's dark figure (Figure 46).

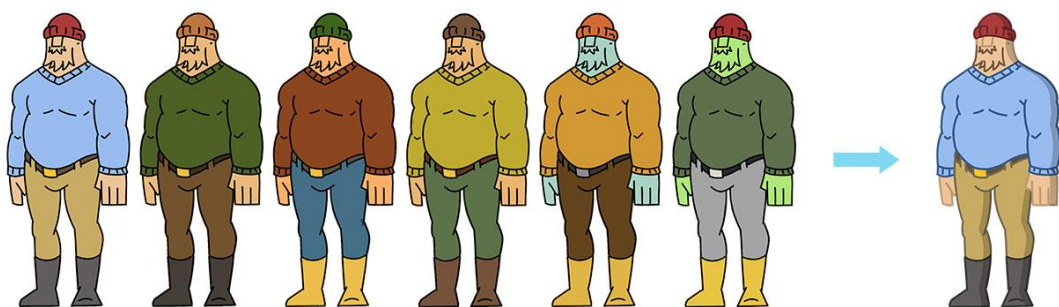


Figure 46 – Showcase of the color tests and final design.

The devil faced the most changes in its design, beginning with the overall shape and color, initially, the antagonist had a bulkier form that was later changed to a thinner and longer shape, mainly to improve the overall design, making him more menacing. Another iteration was in the color, in early concepts the character was fully black, concealing his entire form and even had some scaly textures projected onto him, although this style made his movements hard to understand, with this concern the

character was changed to a grey flat color with dark outlines in each corner of his geometry, replicating the same outline style of the 2D animation, making it easier to see his shape and movements.

The character's head and eyes also went through various iterations, the face had three different designs, one simple dark cylinder that acted as the face, a black scribble that would change during every frame, and no face at all, opting for the last option to emphasize the ghostly aesthetics set in the book. The eyes on the character were originally designed with no glow, although the supervisors suggested to add a light effect on them to improve his design, one iteration involved an incandescent texture with a glowing effect assigned to each eye, this combination concealed their shape, something that was undesired. The solution was to add a simple red texture on the eyes and a point light between them, keeping the flat cartoon style, while having a glow effect that did not disrupt their shape (Figure 47).

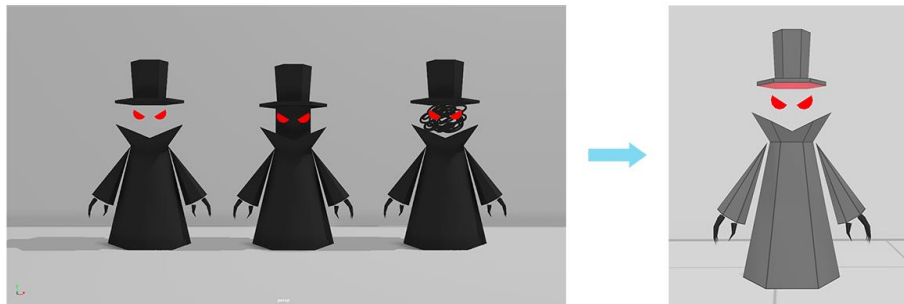


Figure 47 – Iterations of the devil and final design.

The background was also modified, the first designs show a full white textured scene, outlined with thick black lines in each edge, darker shadows, and some additional objects like crates and tables, although all of these combinations overclouded the screen with too many assets and overbearing textures, that proved to be distracting when any character was present. The solution was the simplify the entire background, thinning the outlines, and painting them in grey instead of black, removing the paper texture to a light flat grey color, reducing the intensity of the lights and deleting the crates and extra tables, making the background less noticeable, helping to focus on all the action between the characters (Figure 48).

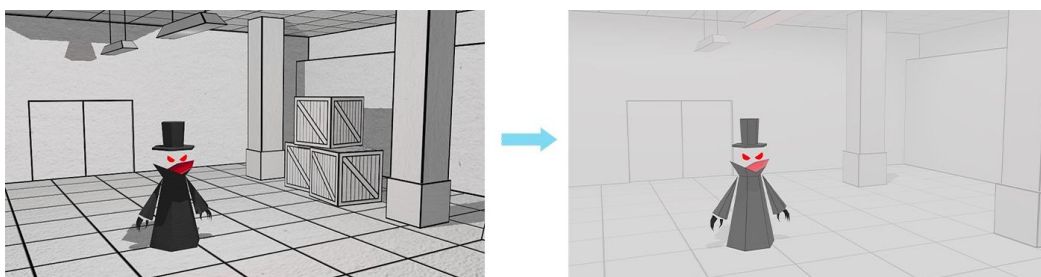


Figure 48 – First and last design of the background.

Other iterations involved minimal changes to some scenes, like thinning the outlines of drawings or speeding up some animations that seemed too slow, although some scenes were entirely altered. Beginning with the first scene in the short film, this shot originally served to set the setting and art style of animation, a simple outside shot of the fishery, that was later altered with thinner lines, darker backgrounds, and better lights, thus improving the overall design of the scene. The important change came from the door that was originally opened, the new version shows a closed door with a light peering through the small gap underneath, showing a dark shape that paces by, this served to turn this uneventful scene into a means of setting the mood, creating suspense early on (Figure 49).

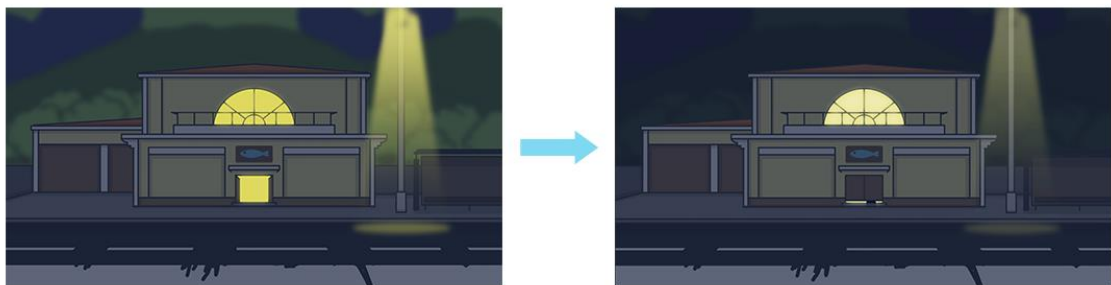


Figure 49 – Showcase of the changes between scenes.

The following shots were planned to have some sort of religious objects, showing a cross on top of the door and on the table, although the idea of displaying the main plot of the story early on would spoil the surprise at the end. The solution was to simply remove those objects and add different decorations (Figure 50).

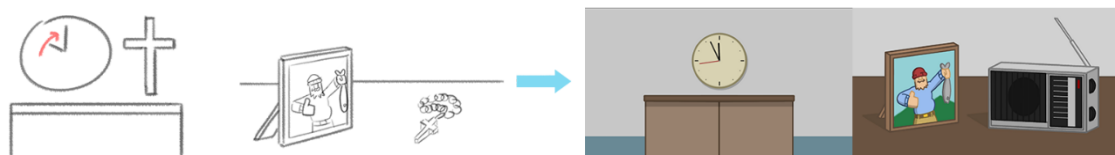


Figure 50 – Demonstration of the changes between animatic and animation.

Another change came from the first scene that showcased the devil, the corridor shot served to guide the fisherman to the room where the fight would ensue, this original shot would break the immersion, because the devil was already present in the room looking at the fisherman, this meant that the protagonist could easily see the antagonist in his peripheral view, which was undesired. The resolve was to show the devil behind the fisherman, when he crossed the middle of the screen, disappearing after a few seconds (Figure 51). Additionally, the scene also demonstrated the 3D version of the background establishing the connotation between the devil and his separate realm.



Figure 51 – Demonstration of the changes between the shots.

The next relevant iteration came from the scene where both characters come face to face, this early shot only showed the 3D environment, this meant that there was no clear transition between the 2D drawn world and the 3D scene, making one of the most important plots of the animation go unnoticed. The solution was to reuse the same scene and draw a 2D version of the background, that then switches back to the already rendered 3D world, making the transition between the worlds more noticeable (Figure 52).

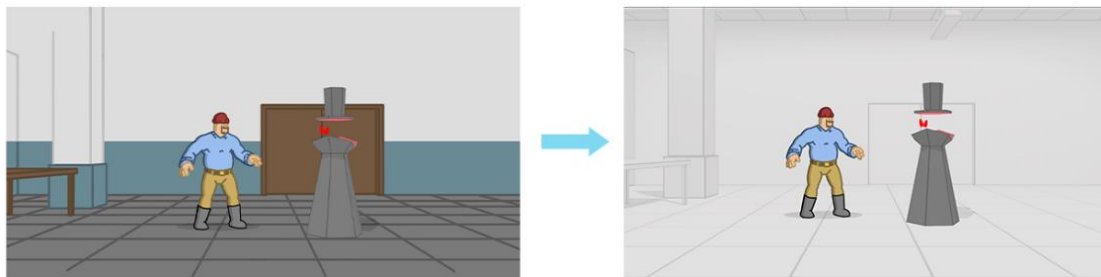


Figure 52 – Showcase of both environments.

Another important alteration was near the end of the animation, the scene where the devil dies, the original concepts seemed too overcomplicated and hard to understand, showing the devil breaking down into pieces, while the camera moved from left to right using a foreground element to transition between the 3D world back to 2D, a shot that in reality did not need to be that complex to demonstrate the death of the devil. Resulting in a clearer and simplified iteration where the devil dissipates in a white glow, making the world return to normal, all shown in a static camera (Figure 53).

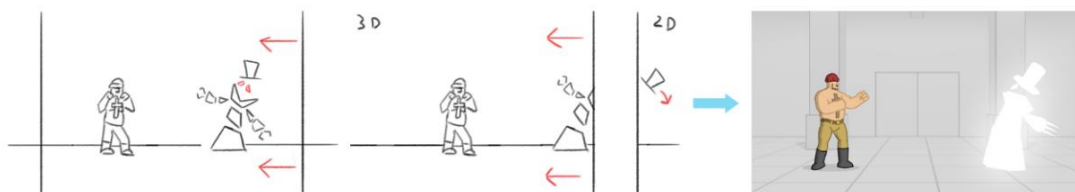


Figure 53 – Showcase of the early concept and final shot.

The final relevant iteration was the end scene of the animation, where the fisherman throws the hat inside a trashcan, the early animation showed the character first going offscreen and then throwing the hat, this shot seemed too abrupt with the sudden appearance of a trashcan and no preliminary action that warned about the thrown hat. Hence the creation of two distinct scenes, the first shot served to show the trashcan in the environment, warning the spectator of the following scenes and the second showed the actual action of dropping the hat (Figure 54).



Figure 54 – Showcase of the two scenes that gave more context to the action.

V.2. “The Fisherman and the Devil”

Link: <https://www.dropbox.com/scl/fi/cvg7huyq2iltzw1ulpfuz/The-Fisherman-and-the-Devil.mp4?rlkey=rr5l4eps240qeb9ml1lssiefz&dl=0>

After all the production stages the animation was ready, achieving a run time of three minutes and twenty seconds. A retelling of a tale from Paul do Mar brought to the screens, as a means of preserving it in a more illustrative media, teaching about one of the old beliefs and the resilience of one man against a powerful evil.

For the context of the paper the short film will be available to watch with the provided links in the appendix section of the report.

The final animation begins outside the fishery, with a dark silhouette passing through the slit on the bottom of the door, making the lights of the building flicker, cutting between each shot with an actual knife slashing sound, switching to three scenes that serve to explain the setting and profession of the main character, showing a up close shot of a fish being cut in pieces (Figure 55).

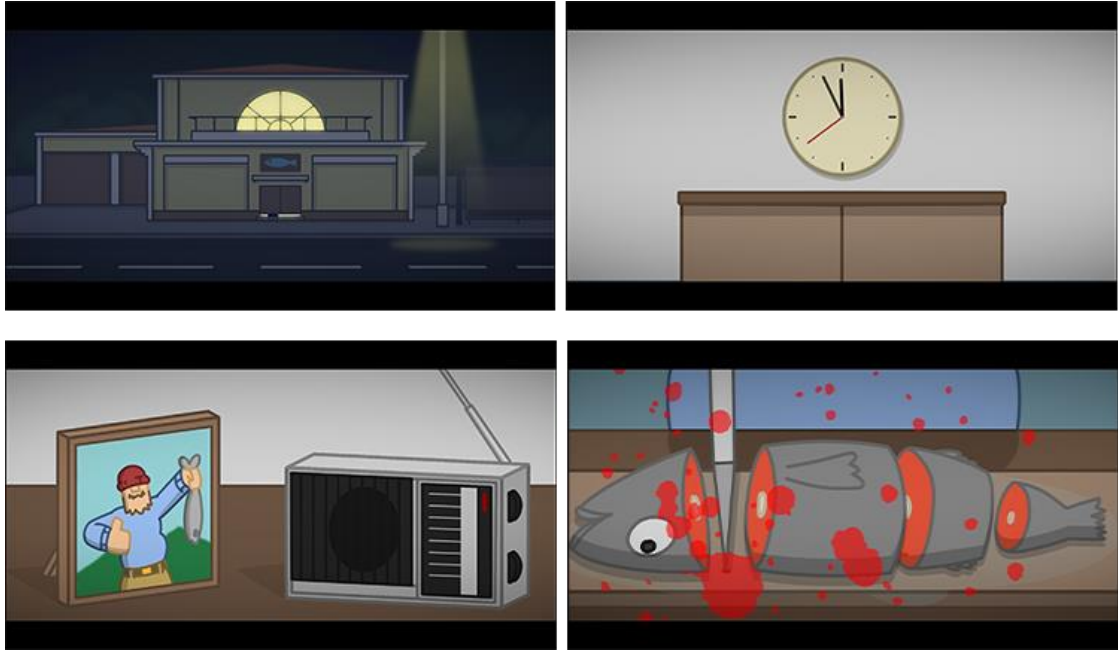


Figure 55 – First shots of the short film.

The next shots served to build up the tension in the film, beginning with the character hearing a sound in the distance, then traversing a corridor with the devil and his 3D realm appearing behind him, luring the protagonist to a room and breaking the ceiling lights, fading the scene to black (Figure 56).

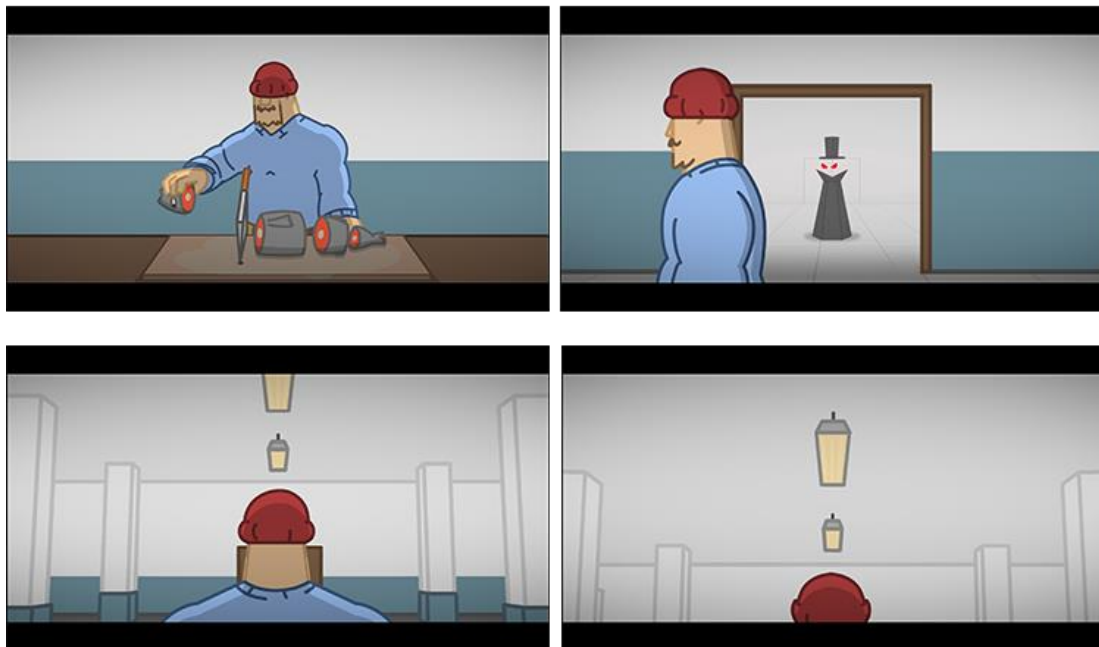


Figure 56 – Frames from the corridor and main room scene.

In the darkness the devil emerges from behind, scaring the fisherman, showing a zoomed out shot of both characters in the environment that transforms from a 2D colorful world to a blank 3D realm, assisting to outline both characters' designs and actions for the following scenes (Figure 57).

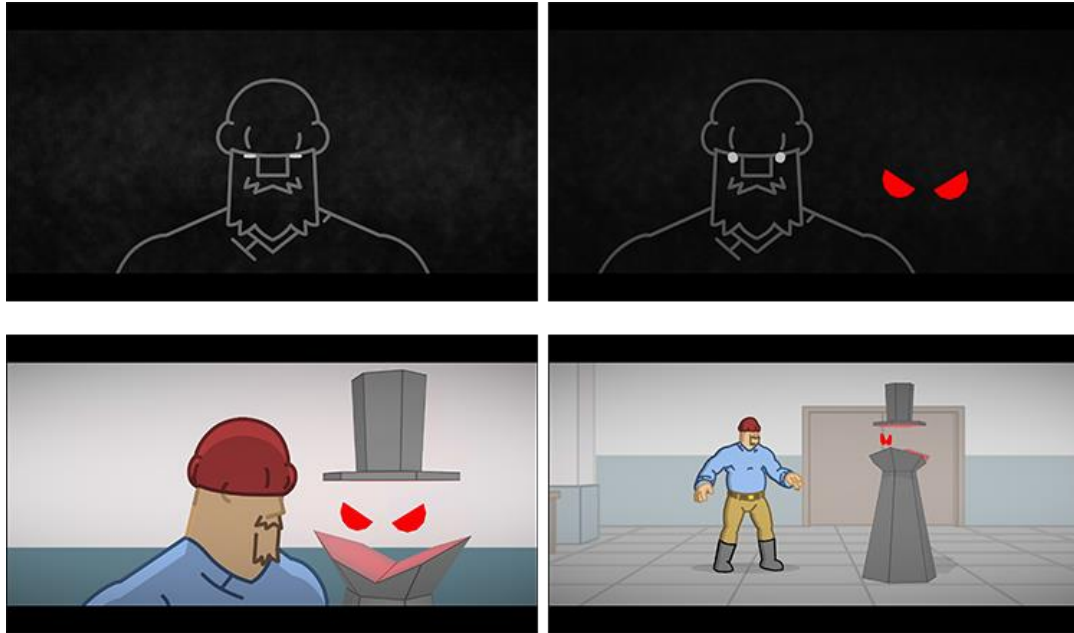


Figure 57 – Scenes from the encounter between characters.

As the tension and action rises, the fisherman backs up until colliding with a table that had a knife, arming the character for the subsequent fight, with a western style shot, with each one displaying their weapons (Figure 58).

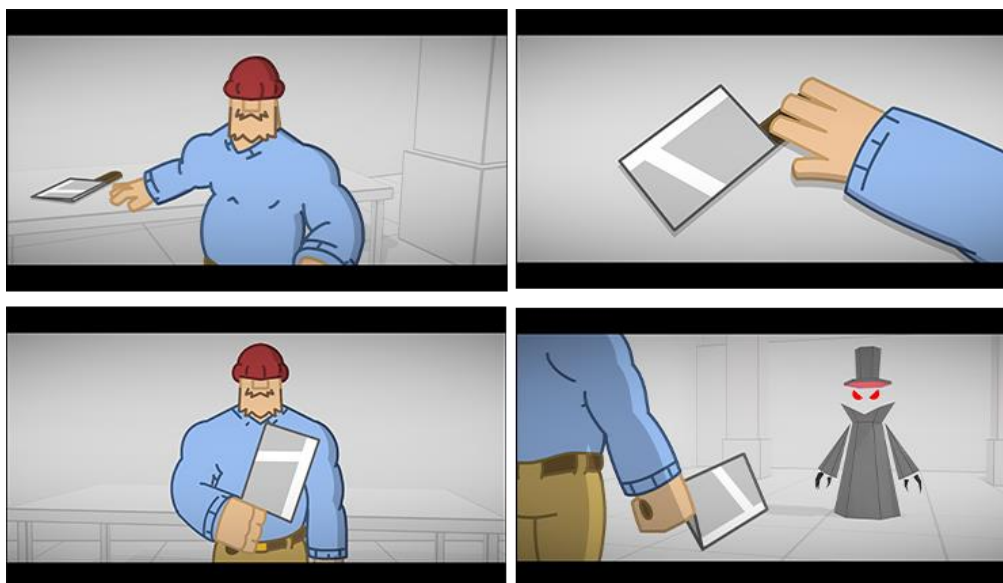


Figure 58 – Images from the starting point of the fight.

In the beginning of the fight, the fisherman lunges at the enemy, with the use of a single pose, in a shot that is reminiscent of Japanese animation, with similar wind effects that are used to display the effort and speed of the character, cutting to a wide shot, the hero slices the enemy in half, to no avail, as the camera rotates in the 3D scene revealing the devil returning to normal (Figure 59).

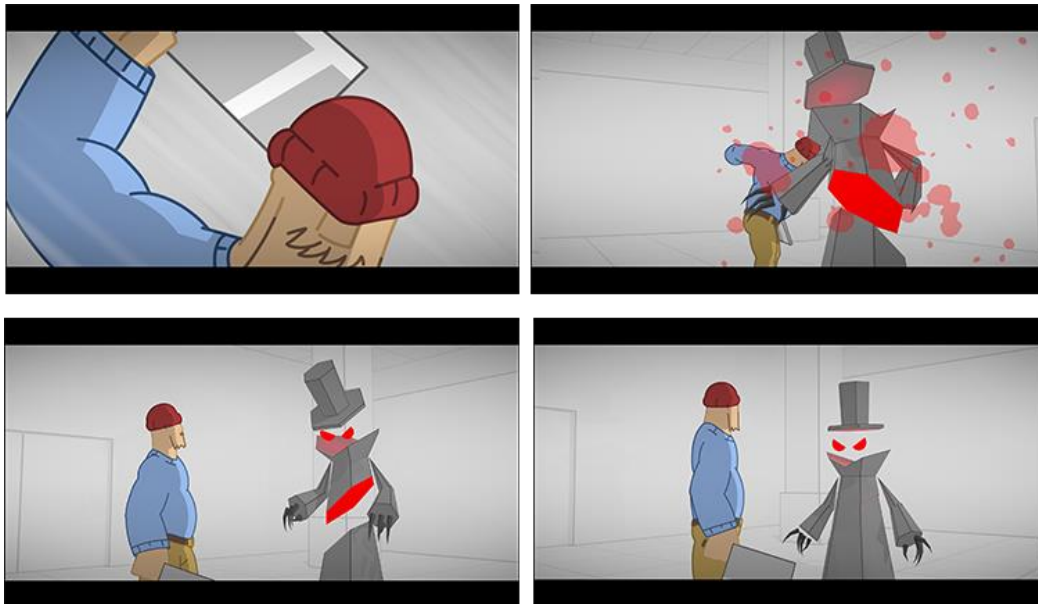


Figure 59 – Shots from the first strike.

The next scenes show the reaction of the fisherman and his following attack, as he drops the knife to go for a punch, that gets interrupted by an upwards slash from the claws of the devil (Figure 60).

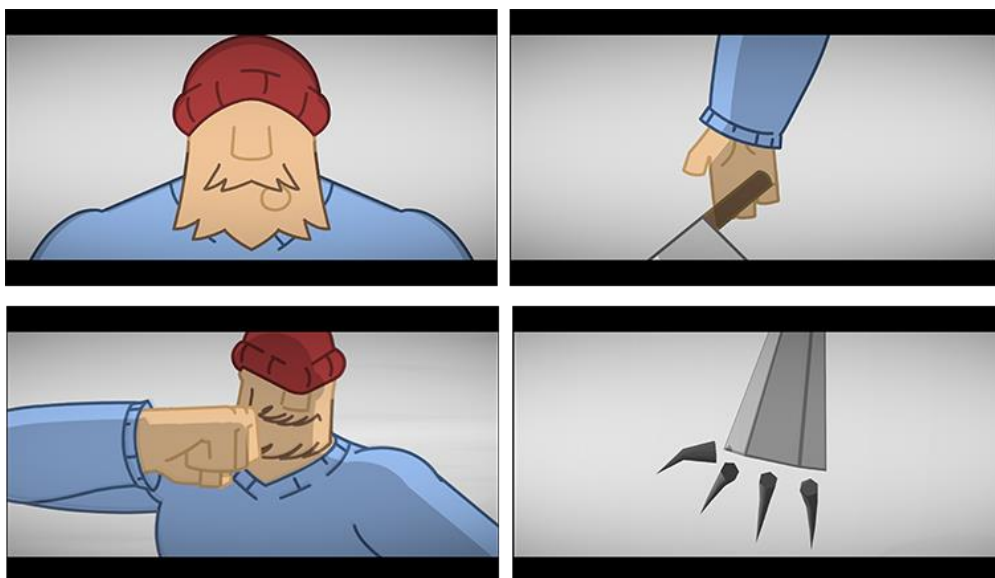


Figure 60 – Frames from the second phase of the fight.

The attack from the antagonist throws the character with so much force that creates a shockwave, leaving a crack on the wall, highlighting the power of the enemy, knocking down the fisherman, leaving him defenseless as the devil slowly approaches, rising up the tension of the film (Figure 61).

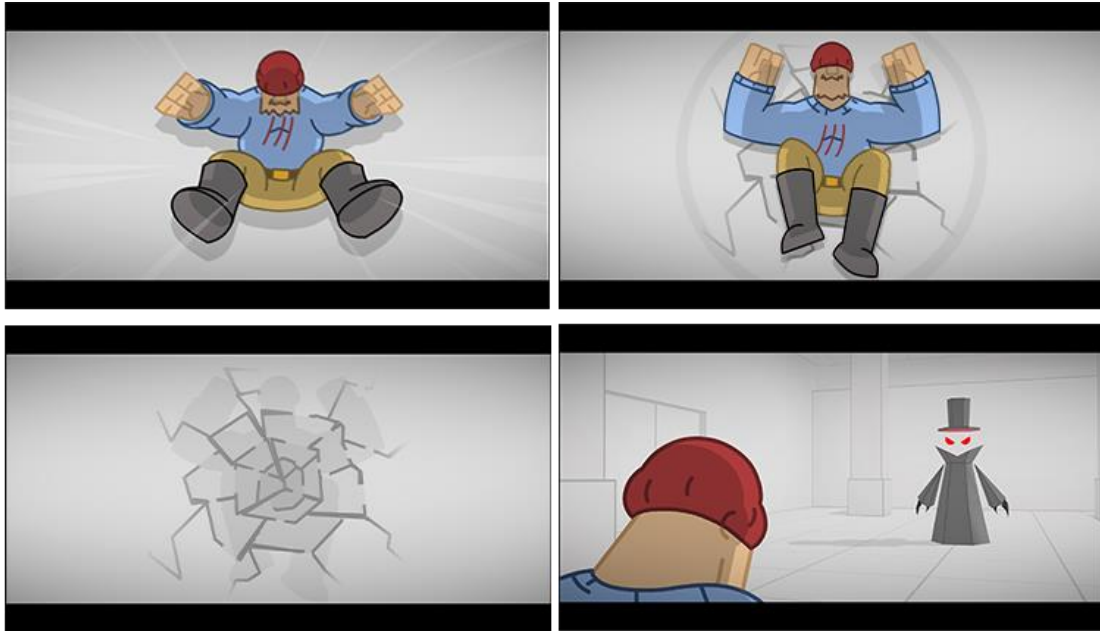


Figure 61 – Shots displaying the crater and fisherman knocked down.

Arriving at the plot twist, the resilient fisherman rises up to remove his torn blue shirt displaying the holy symbol on his chest, raising his fists to fight again (Figure 62).

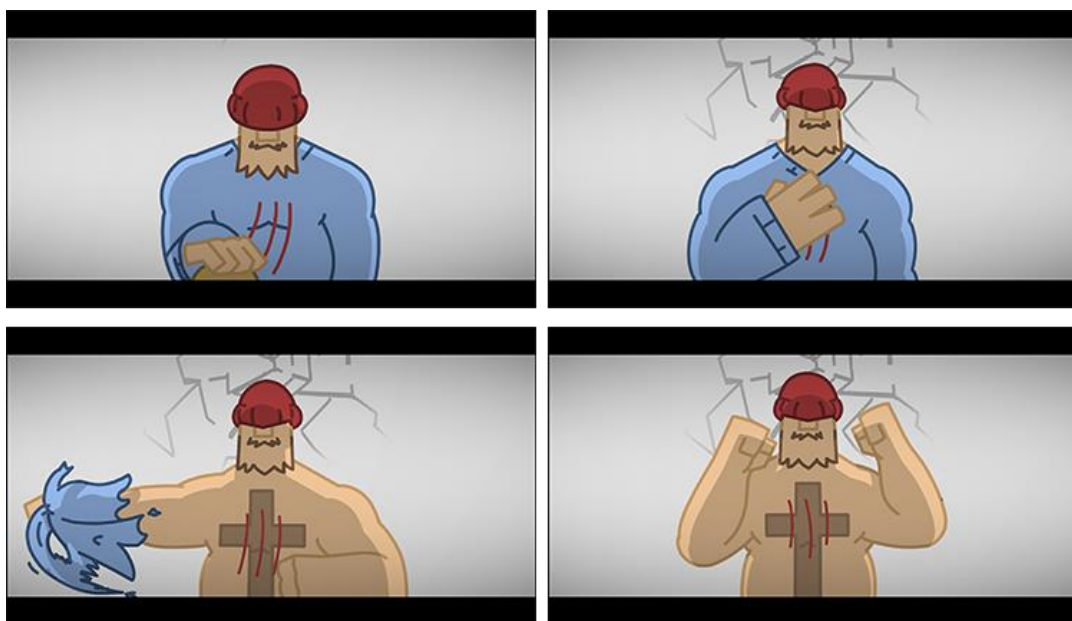


Figure 62 – Fisherman ripping the shirt scenes.

The devil sees the worthless effort of the fisherman and begins to laugh, only noticing later the presence of the holy symbol on the fisherman's chest that quickly purges him from the world, ending the fight (Figure 63).

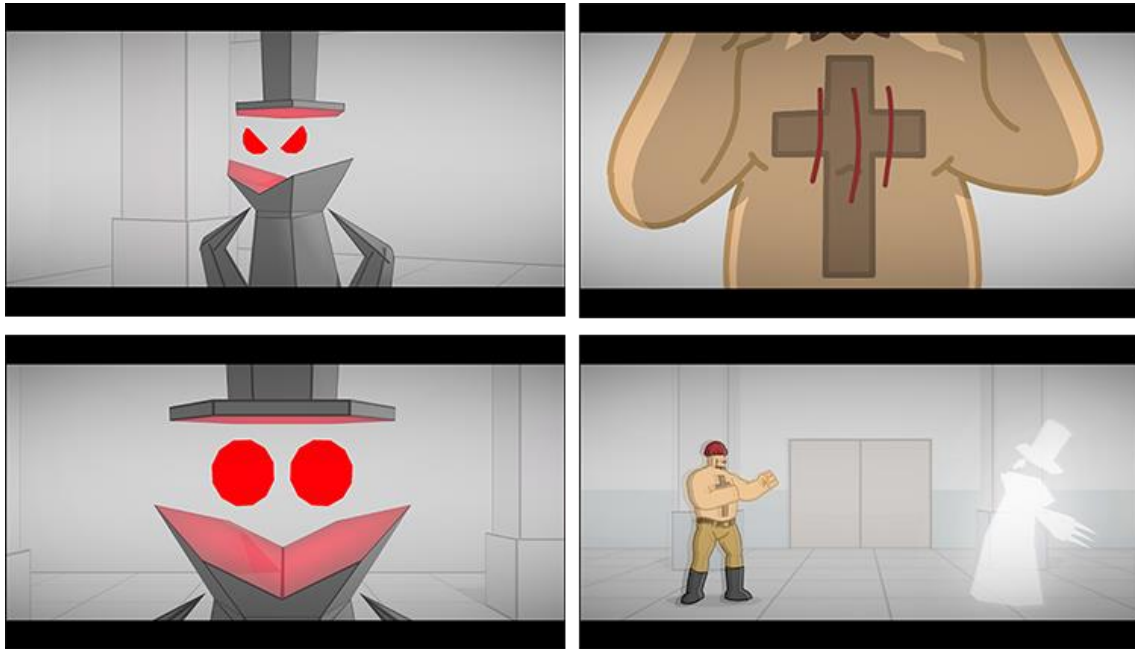


Figure 63 – Reaction and death of the devil.

The devil disappears, reverting the realm back to normal, leaving only a hat that the fisherman decides to pick up (Figure 64).

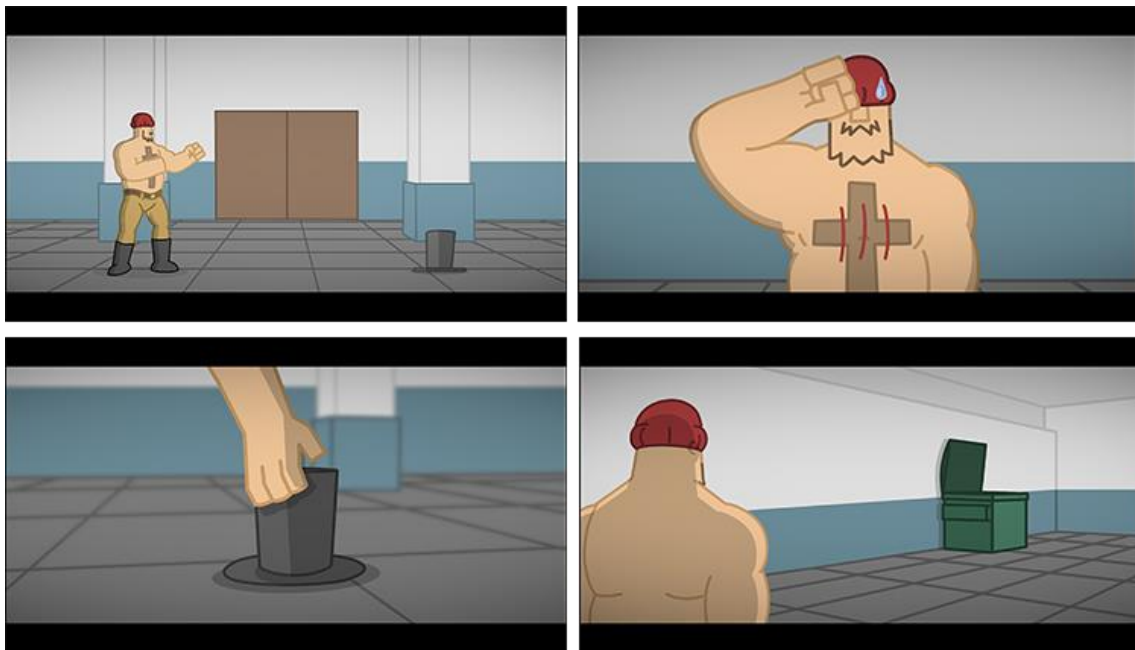


Figure 64 – Scenes of the world returning to normal.

The final scene in the short film shows the fisherman dumping the hat in the trash, going offscreen to turn off the lights and close the door of the fishery, ending the animation with a post-credit scene of a red glow coming from the trashcan, giving the idea that the devil might not be dead after all (Figure 65).

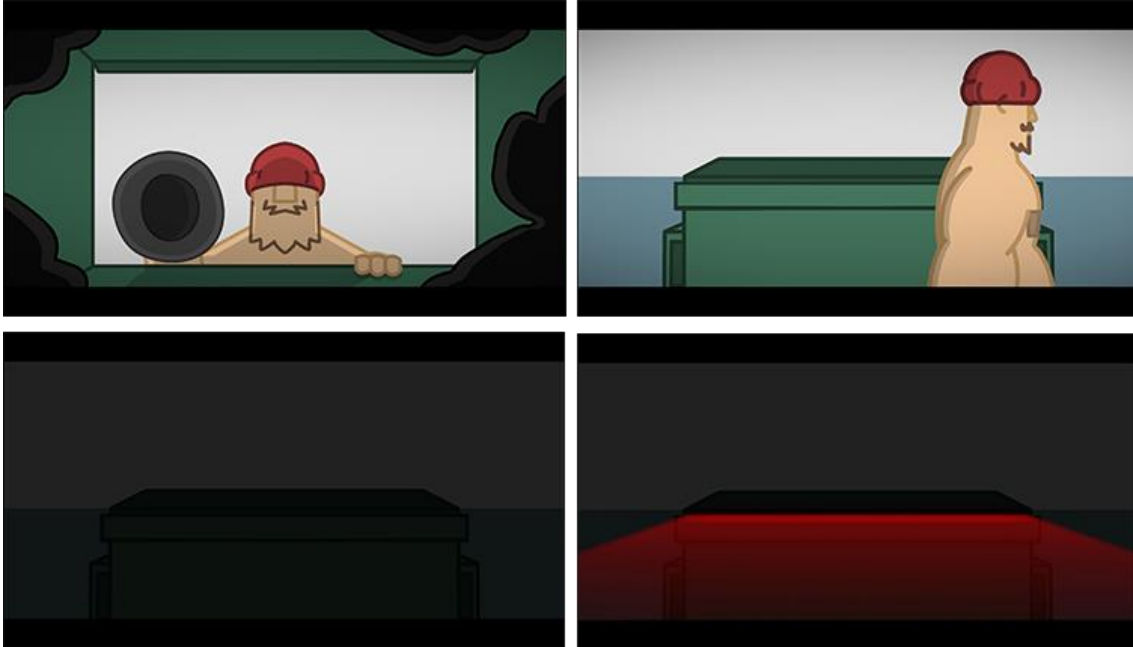


Figure 65 – Final shots from the animation.

VI. Conclusion

In the development of short-film, “The Fisherman and the Devil”, this report served as the behind the scenes of the entire project, revealing the research, designs and concepts that fueled the project. Highlighting the experiments between the two mediums used for the hybrid animation, based on interdisciplinary techniques and programs previously learned in university, joining 2D traditional animation, rotoscoping, and vector motion with 3D manual animation. This thesis disclosed each production phase of the work, beginning with the research of the tale and ending with the final animation, showcasing all the steps and tribulations of the project.

This thesis underlined the importance of folklore tales, revealing their educational value, as well as the contributions of transforming and preserving any tale into a video format, explaining the vital considerations and precautions needed for creating any animation that respects the represented culture. This analysis evidently influenced the choice of the story, picking a tale that had a generally know premise, the idea of a devil and the power of the cross, portrayed in an animation that respects the culture by using generalized but creative designs and minimalistic art styles.

Animation in general is a labor-intensive work, either 2D or 3D, manual or computer, it’s vital to explain the fundamentals and principles, that can be applied to any chosen technique, like anticipation and character appeal, all serving to improve the movements and art style of any animation. This paper displayed all the relevant techniques that spawned from each medium, like traditional and rotoscoping for 2D animation, as well as claymation and motion capture for 3D, giving a brief theory of the growth in popularity of 3D animation, while reinforcing the statement that no medium is better than another, since nowadays all are well established and successful, explaining the reasons why artists and animation studios may pick one technique over the other or the decision process behind combining both, like the visual style that the artist wishes to achieve, the complexity of the shots that some techniques excel at, and evidently the time and budget given for a project, all useful information for any aspiring artist that wishes to create a hybrid animation, allowing them to use this work as a basis for their future projects.

Considering all the factors stated above, the original story offered the ability to use both mediums to create a hybrid animation, thanks to the concept of two distinct characters and shifting worlds, each one was allocated to their respective dimensions, designed and animated for each medium. These techniques were chosen for their freedom of expression and familiarity with each separate process. Although the project displayed an experimental stage, since the combination of both mediums was something new that I had never done before, resulting in various tests between the chosen programs, Maya and Photoshop, to determine which medium would lead the other in the production stage of the animation, as a result the entire project followed a standard 3D animation pipeline, prioritizing 3D first then 2D.

Throughout the development of the project I was quickly reminded of the tedious processes of animation, being 2D or 3D, all methods require some level of expertise and practice, which both affect the quality of the animated work and the time invested to create each scene.

Early on, my abilities as an artist and animator were tested, showcasing a level of difficulty in relation to the 2D fisherman, taking a large amount of time drawing a single frame and even struggling to maintain the right proportions of the character in different shots, realizing this impasse, the solution was to use the other medium, 3D animation, to create a 3D reference for the fisherman to trace over, speeding up the production of the animation. Realizing that both dimensions of animation can help each other, to reduce line mileage, aid in any challenging process and help achieve the artist's vision.

During the animation process a number of limitations presented themselves. In fact, the main concern was the time management, having projected the project's completion to take around a whole semester, I had to allocate enough time for each production phase, as well as the much needed experiments to familiarize myself with the entire process and programs. Another problem was finding the balance between mediums, each scene presented their own nuances, requiring various iterations and tests before establishing the final shots.

Furthermore, throughout the production process I realized that with all the pre-planning, with storyboards, animatics, and tests between programs, problems will always occur, being from limitations of skill, shots that required extra steps, scenes that were overcomplicated and even hard to understand. It's always important to showcase my work in every step of production and listen to feedback, being from the supervisors and others, their criticism and reaction will reveal the gaps of the project, disclosing what needs to be changed and iterated to improve the overall quality of the animation.

In conclusion, this thesis revealed all the processes and tools used in the development of the project, all produced digitally, within the chosen programs that allowed for creative freedom, within one computer. For the future work, the goal is to develop my skills as an artist and animator, enhancing the quality of my projects, and at the same time find more efficient and creative ways to merge the different mediums. This work did surpass my expectations, although it's important to notice that no animation is ever completed, it's only delivered, since this was my first ever full animation, there's always something to be improved and expanded upon.

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Appendix

Animatic:

https://www.youtube.com/watch?v=xjrzCaG7pFk&ab_channel=AnimationFisherman

Trailer:

https://www.youtube.com/watch?v=-b5I5NxuJTc&ab_channel=AnimationFisherman

<https://vimeo.com/manage/videos/860954907>

Technical details:

The Fisherman and the Devil

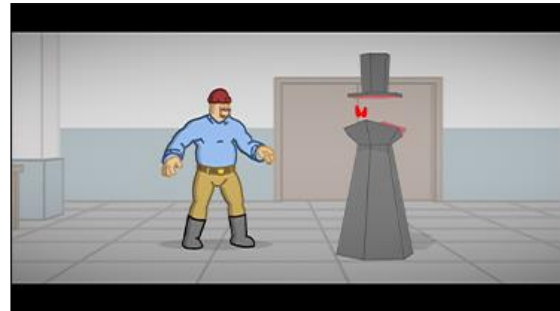
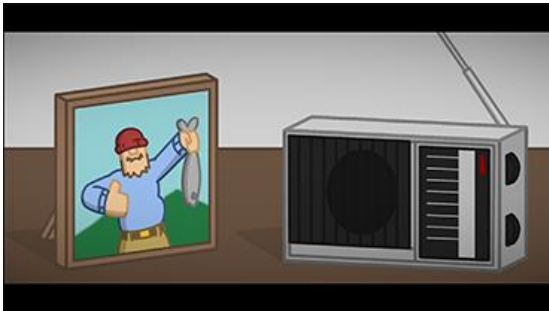
03:20 min. Animation short film -mixed animation-. Portugal 2023. Format: HD.
Sound: Stereo

Technical details:

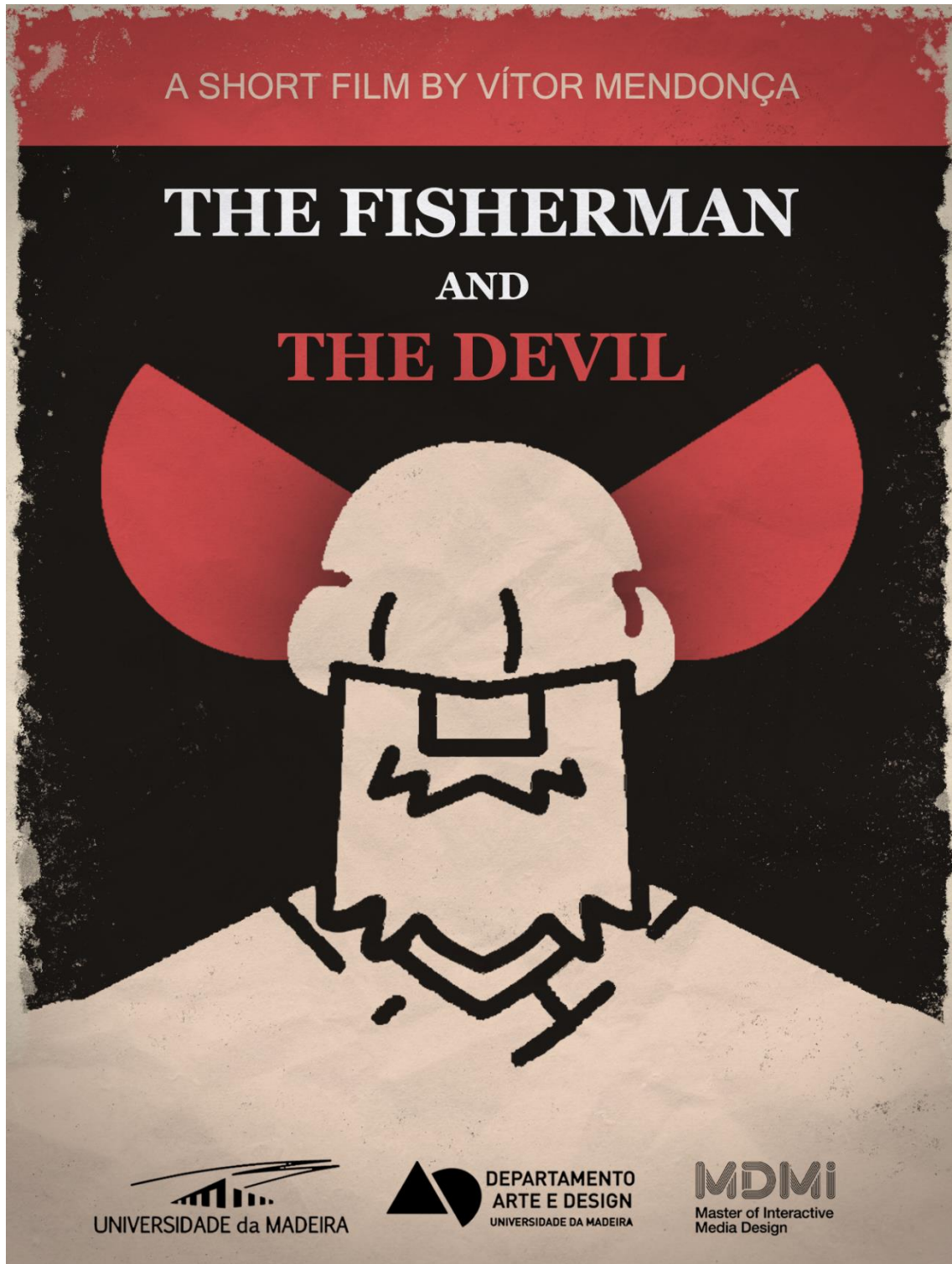
Directed, produced, animated, sound designed and edited by Vítor Mendonça. Music by David Robson. Part of the Master Thesis Project: An artistic short film based on a folklore tale from Madeira island using interdisciplinary animation techniques. Funchal 2023

Synopsis:

A fisherman comes to face with a devil in a fight for his life.



Poster:

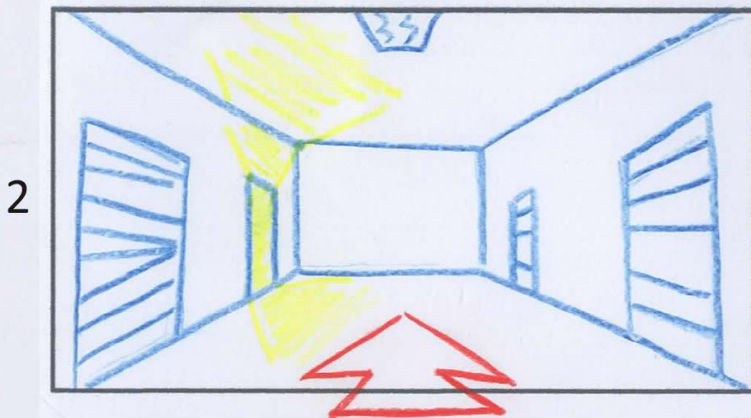


Storyboard:

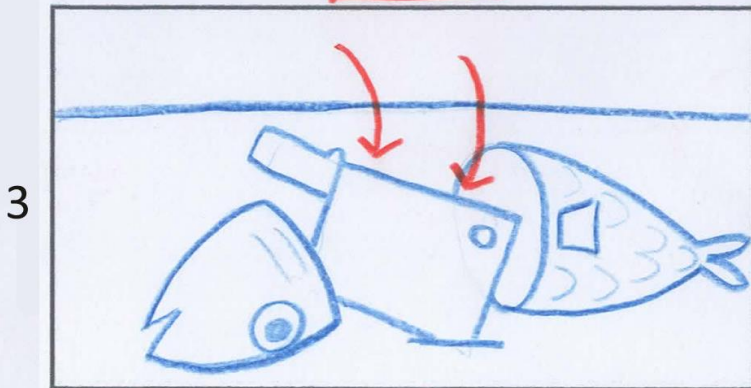
Project:	Date:
Director:	Storyboards:
1st A.D.:	U.P.M.:
	Page: ___ / ___



Scene	Shot #
SHOT DA PEIXARIA DE LONGE	
Location	

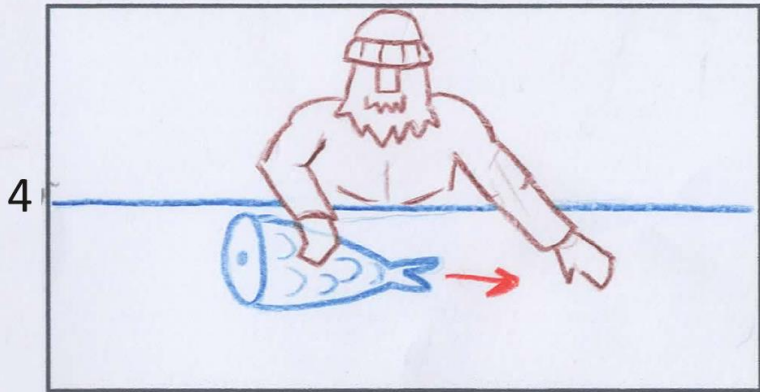


Scene	Shot #
A CAMARA APROXIMA	
(COM CADA CORTE TEM UM SOM DE UMA FACA)	
Location	

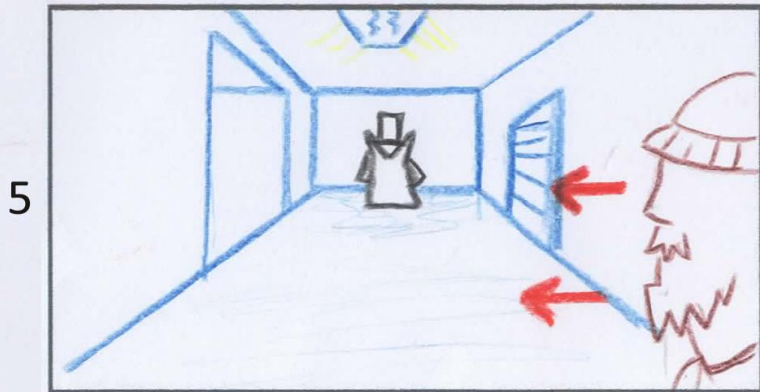


Scene	Shot #
MOSTRA A FACA A CORTAR O PEIXE	
(CLOSE UP)	
Location	

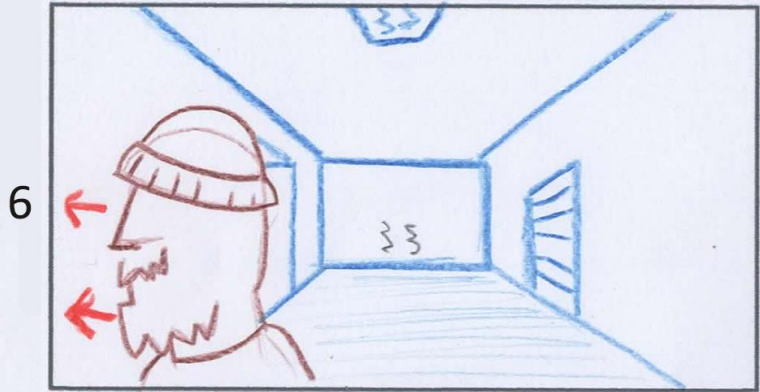
Project:	Date:
Director:	Storyboards:
1st A.D.:	U.P.M.:
	Page: <u> </u> / <u> </u>



Scene	Shot #
6 PESCADOR PEGA NO PEIXE E GUARDA NA ARCA	
Location	



Scene	Shot #
VAI ANDAN ANDANDO.	
VEMOS O DIABO DE LONGE	
Location	



Scene	Shot #
6 DIABO DESAPARECE	
(quando o pescador passa)	
Location	

Project:	Date:
Director:	Storyboards:
1st A.D.:	U.P.M.:
	Page: ___ / ___

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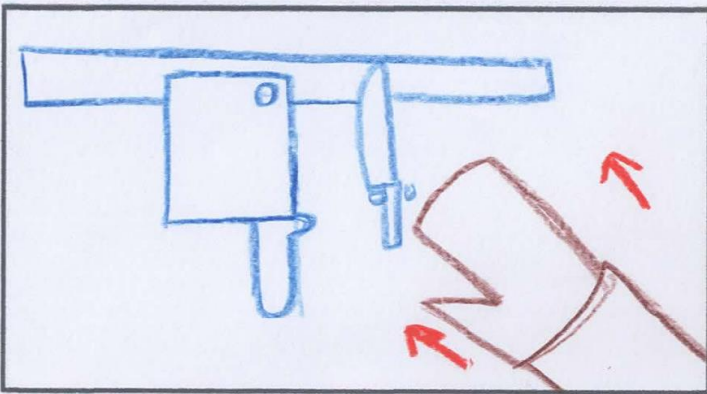
Scene	Shot #
O DIABO APARECE DO NADA!	
Location	

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Scene	Shot #
O PESCADOR FICA SURPRESO	
Location	

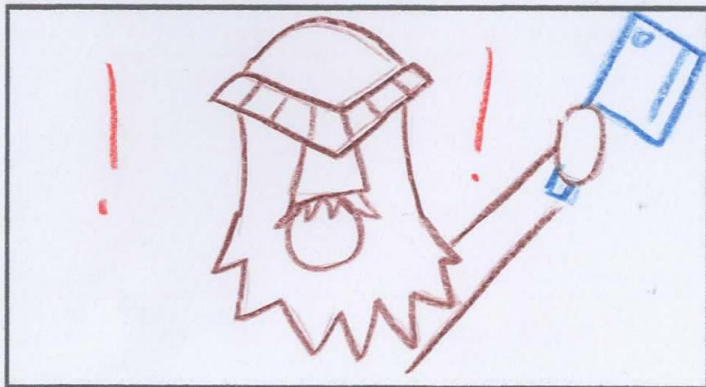
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Scene	Shot #
O PEÇA DO FACALHÃO	
Location	

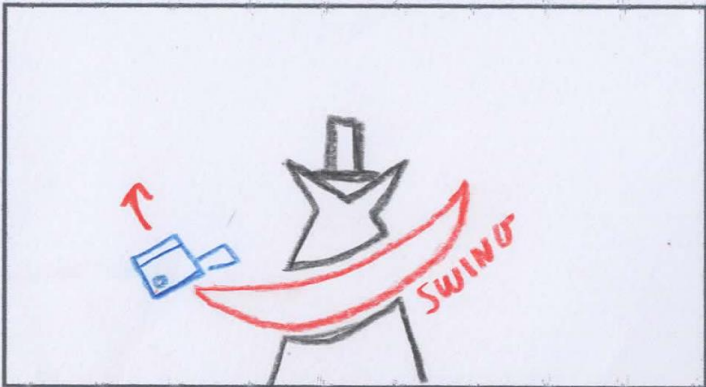
Project:	Date:
Director:	Storyboards:
1st A.D.:	U.P.M.:
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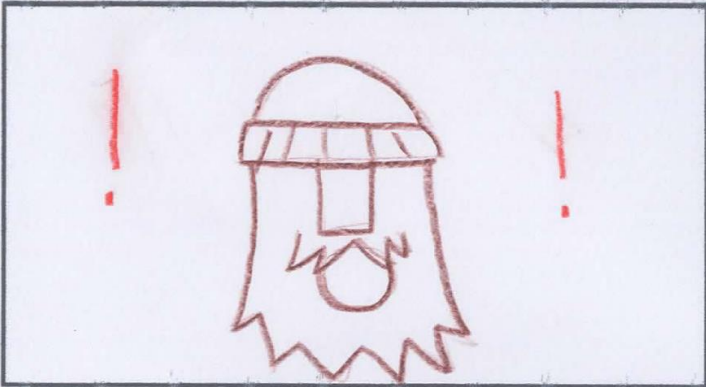
Scene	Shot #
6 PESCADOR	
ATACA LOGO!	
Location	

17



Scene	Shot #
FAZ SWING	
MAS	
TRESPASSA	
Location	

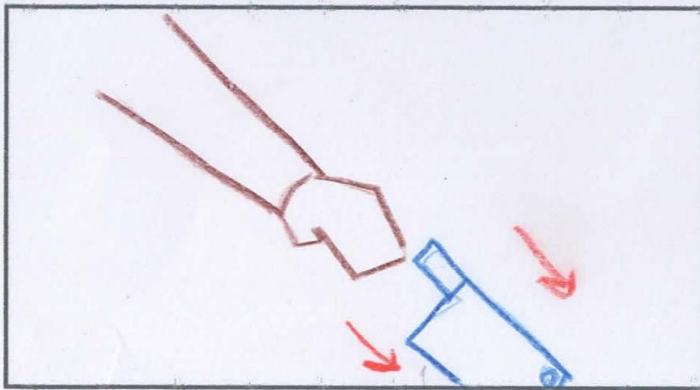
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Scene	Shot #
FICA	
SURPRESO	
Location	

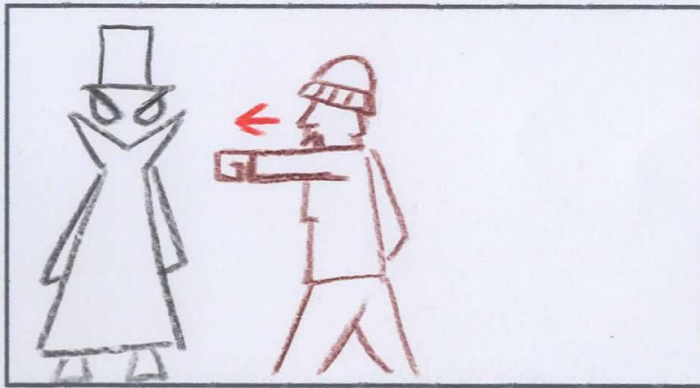
Project:	Date:
Director:	Storyboards:
1st A.D.:	U.P.M.:
	Page: <u> </u> / <u> </u>

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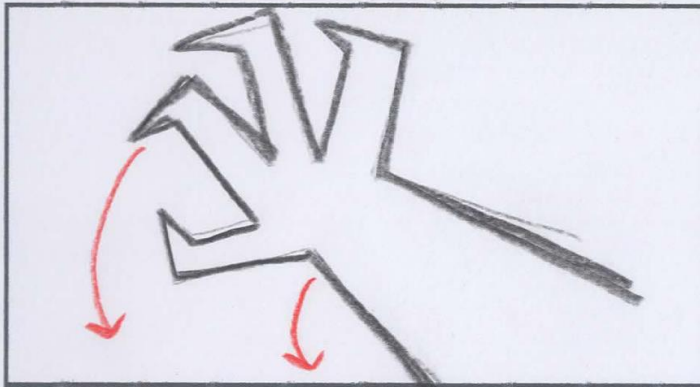
Scene	Shot #
LARGA A	A
FACA	
Location	

20



Scene	Shot #
SOLOS E	
PONTAPES	
Location	

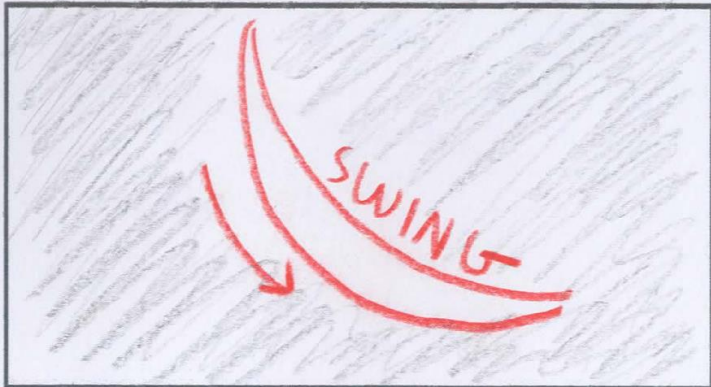
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Scene	Shot #
ODIABO	
LEVANTA A	
MAO E	
ARRANHA	
Location	

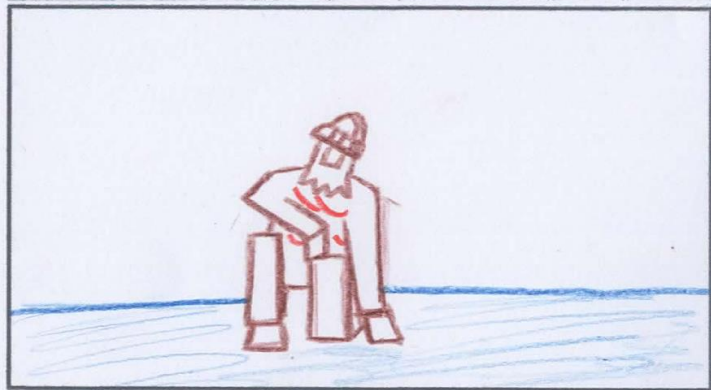
Project:	Date:
Director:	Storyboards:
1st A.D.:	U.P.M.:
	Page: <u> 1 </u>

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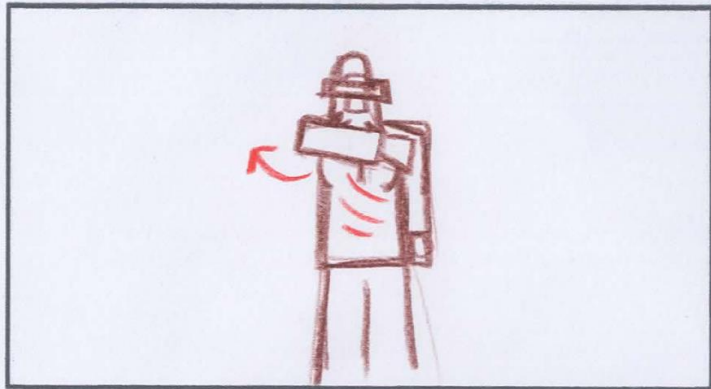
Scene	Shot #
SWING!	
Location	

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Scene	Shot #
O PESCADOR	
RECOIHE	
MAS	
LEVANTA-SE	
Location	

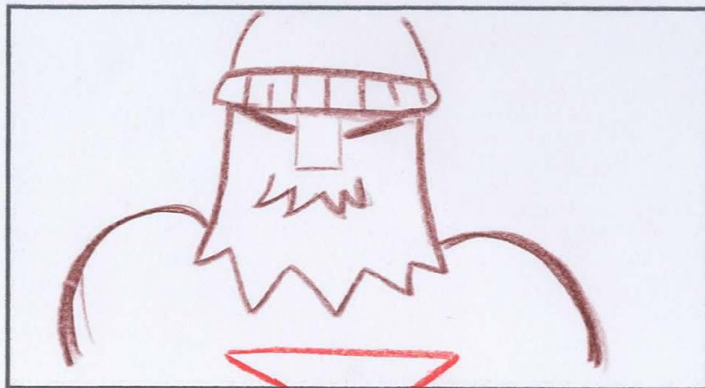
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Scene	Shot #
RETIRA A	
CAMISA	
Location	

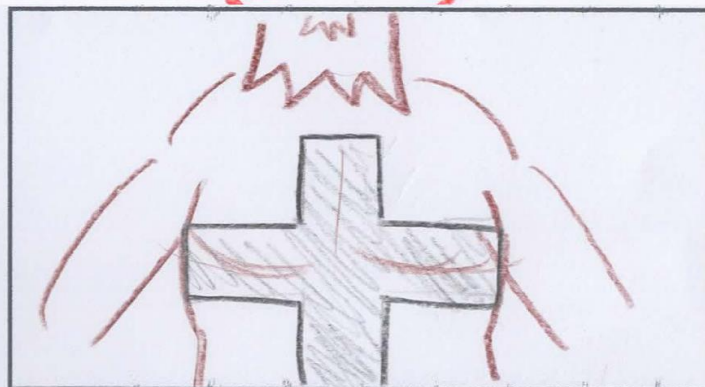
Project:	Date:
Director:	Storyboards:
1st A.D.:	U.P.M.:
	Page: <u> </u> / <u> </u>

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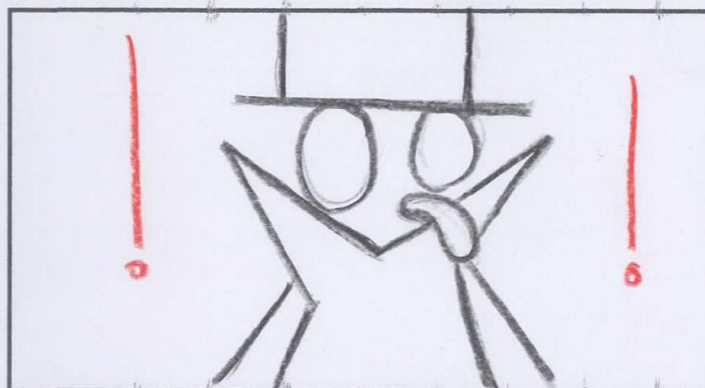
Scene	Shot #
CLOSE UP	
A CAMARA DEXE	
Location	

26



Scene	Shot #
MOSTRA A CRUZ	
Location	

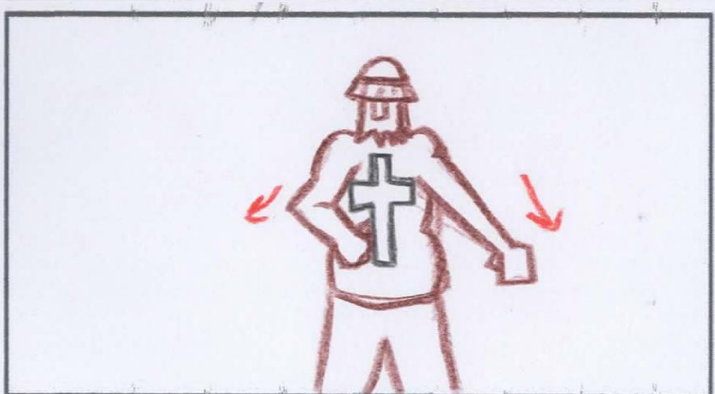
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Scene	Shot #
O DIABO FICA ASSUSTADO	
Location	

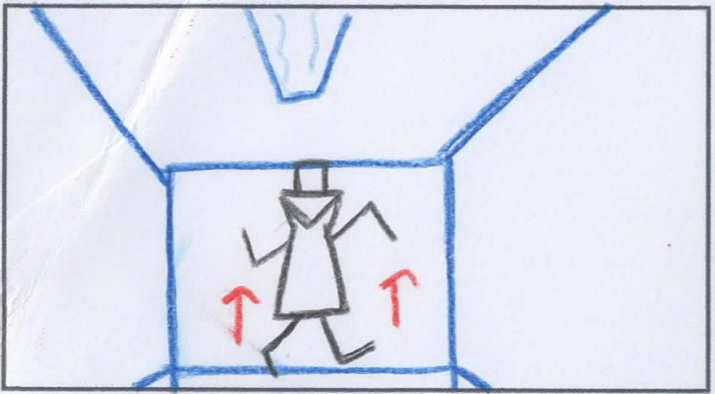
Project:	Date:
Director:	Storyboards:
1st A.D.:	U.P.M.:
Page: <u> </u> / <u> </u>	

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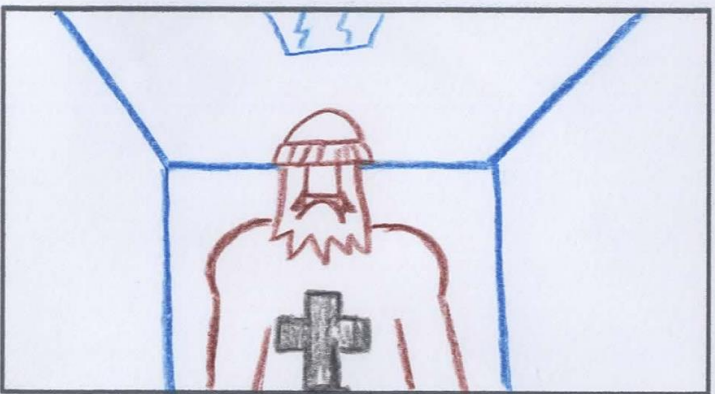
Scene	Shot #
6 PESCADOR	
PREPARA	
PARA ATACAR	
OUTRA VEZ	
Location	

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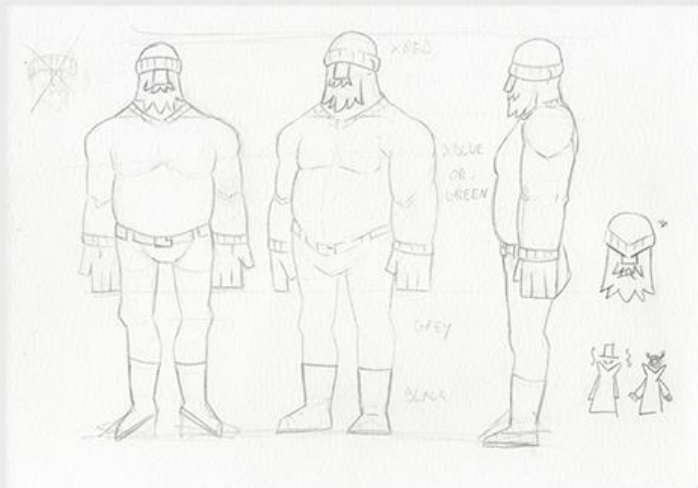
Scene	Shot #
6 DIABO	
FOGE	
Location	

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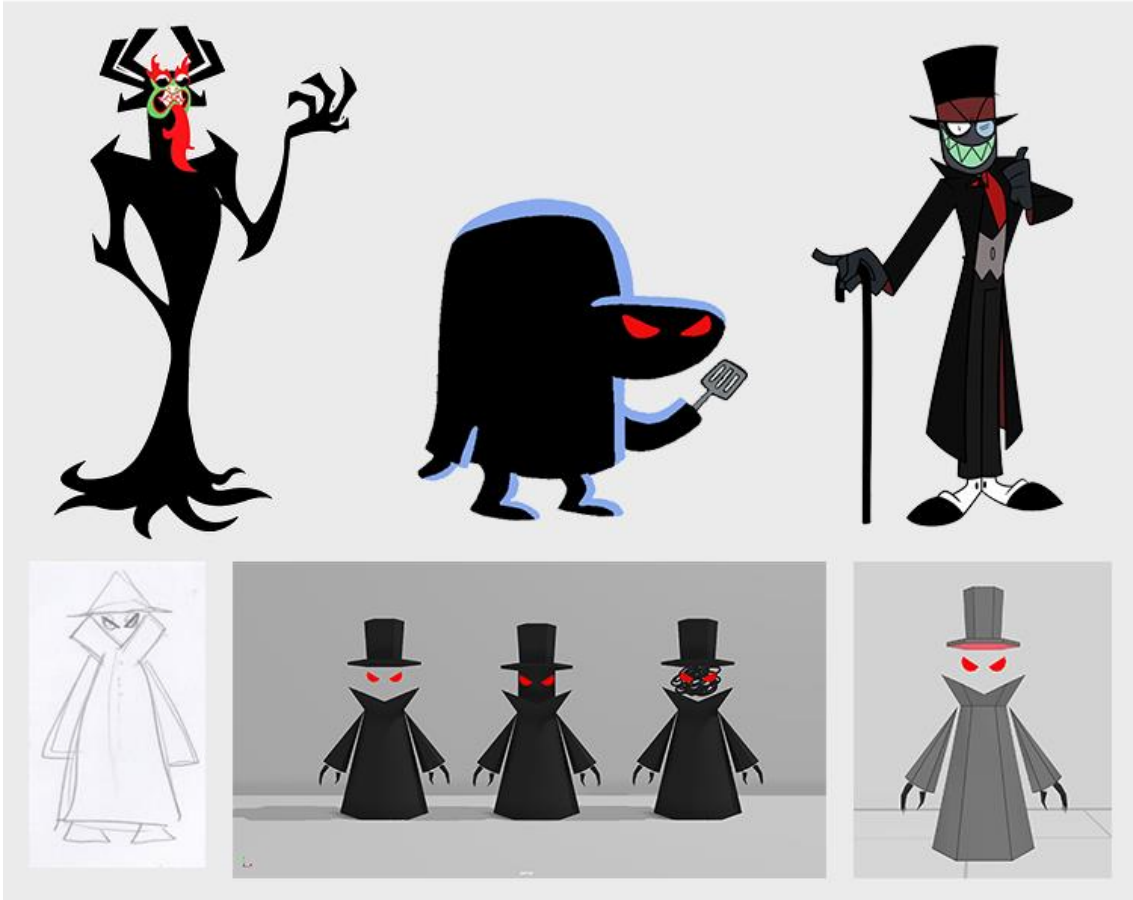


Scene	Shot #
6 DESPONTADO	
O PESCADOR	
BENZE-SE	
Location	

The Fisherman



The Devil



The Background

