

# Creative Project

## R&D Document

During this assignment I will create a matte painting set extension. The piece will showcase and develop my understanding of matte painting and projection mapping techniques. I will carry out research into effective composition, lighting and perspective in order to create an interesting and realistic matte painting. I will also explore how to derive meaning and give the piece a story through the composition and the use of a focal point where the viewers eye is drawn.

### Concept

A fantasy themed matte painting set extension. I will use stock footage of the sea and extend the shot by creating a matte painting with rocks and mountains that sit on the surface of the water. These rocks and mountains will have a jungle theme with greenery and vegetation to add further interest to the piece.

### Aims of the Project

- To improve my knowledge of the matte painting process.
- To achieve realism in the matte painting.
- To make an effective composition that tells a story.
- To have correct perspective with interesting lighting, shadows and reflections.
- To create a cohesive colour grade that furthers the fantasy theme.

### Software

- Adobe Photoshop: I will use Photoshop to create the matte painting.
- Nuke X: I will use Nuke X for projection mapping and to composite the matte painting onto the sea stock footage.
- Adobe Premier Pro: I will use Premier Pro to edit the shot and add music.

# Research

## Composition

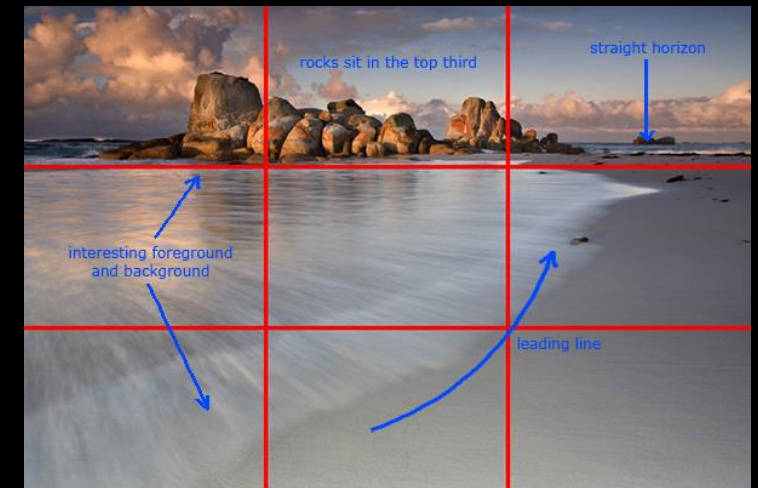
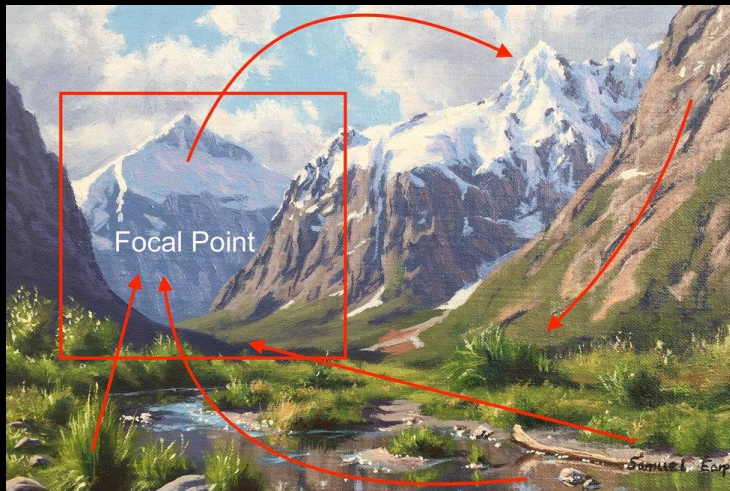
I carried out research into composition to further my understanding. This will be essential in creating an interesting matte painting. I looked at an article by Barry O 'Carroll that explains composition techniques.

### Rule of Thirds

The rule of thirds is an effective and widely used technique in which a grid is used to determine where objects are placed. It is effective to use the horizontal lines to section the composition and match the horizon lines. Instead of framing the focal point in the centre, this rule suggests putting the focal point and where you want the viewers eye to be drawn on the intersecting lines. Following this rule creates an attractive composition that is easy for the eye to read. I will apply this technique in my matte painting to make an interesting composition.

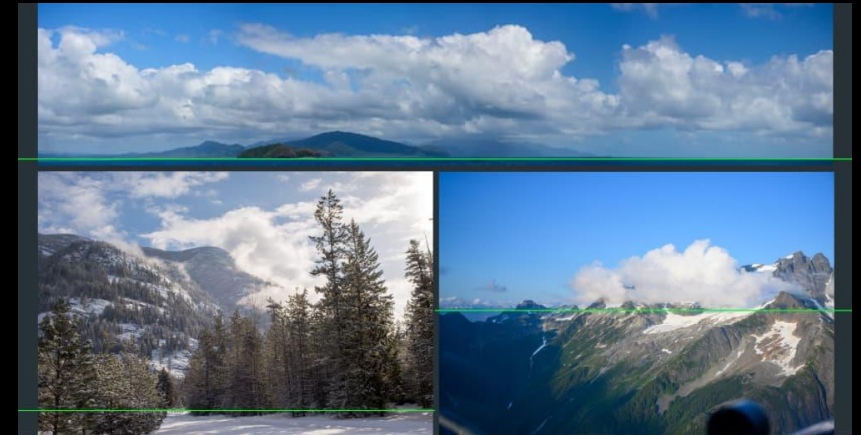
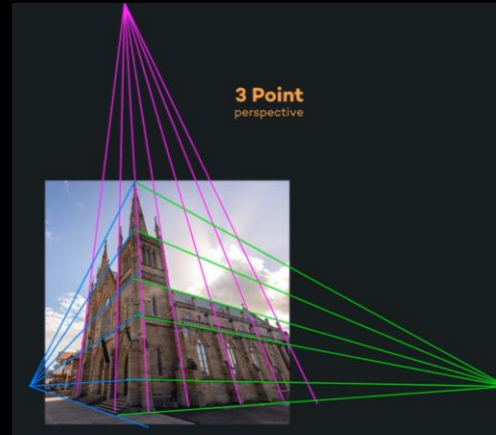
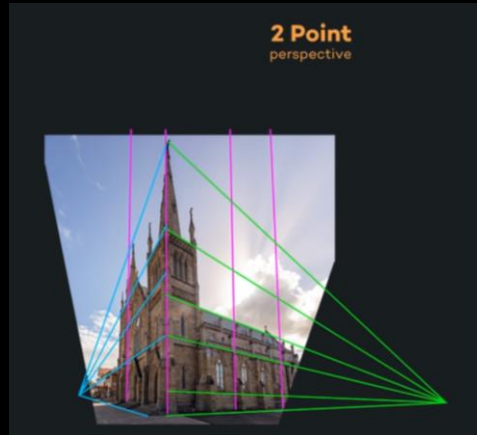
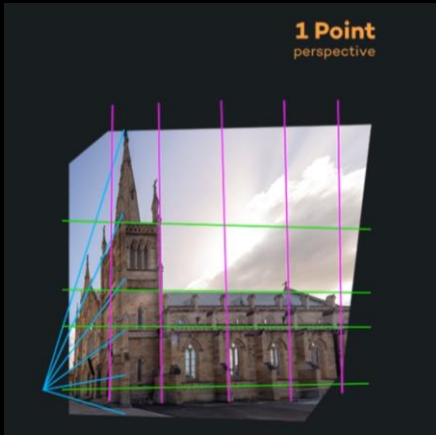
### Leading Lines

Applying leading lines, such as paths and walls, to the composition are effective in directing the viewers eye through the composition and also drawing the eye to the elements in the correct order. This focuses the attention on important elements. I will use this method in my matte painting to draw attention to the focal point.



## Perspective

I researched different types of perspective to develop understanding and help me to achieve cohesive perspective throughout this matte painting. A blog post on [mattepaint.com](http://mattepaint.com) by Conrad Allan describes how to match the perspective of different elements. It demonstrates how to find the vanishing points of images using parallel lines. The number of vanishing points an element has determines if it is one, two or three point perspective. Conrad Allan also provides a tutorial explaining how to match elements by lining up their horizon lines. I will use these ideas when combining images in my matte painting.



## Deconstructing Light

A tutorial on [mattepaint.com](http://mattepaint.com) describes deconstructing light in a scene. This tutorial discusses lighting principles such as direct light, reflections of radiosity and atmospheric haze. I practised integrating a circle into two shots that are similar to those I will use in my matte painting. It is interesting to see how the lighting and surrounding colours of the environment cast onto the circle, simulating how light behaves in real life. This practise will be helpful in improving my awareness of the lighting in my matte painting and help integrate the layers more effectively.





## Matte Painting Inspiration

I looked at various matte paintings to gather inspiration for my project.



In this matte painting I like the cohesive stormy sky and sea. The dark colour grade and jagged rocks bring the piece together.



Good composition, the mountains are on either side leading the eye down the middle. I think the prominent light rays look visually interesting.



The interesting rock formations work well, I particularly like the heavy greenery and vegetation. The reflections look realistic, making the piece more believable.



The scale of the mountains is portrayed effectively through the addition of the boat and foreground rocks. Good atmospheric depth which furthers the realism.



In this matte painting I like the variety of rock shapes, particularly the large arches in the distance. The addition of the fluffy clouds also adds further interest.



I like the strong fantasy feel achieved through the warm colours, waterfalls, rainbows, jungle vegetation and atmospherics. The composition is good with the focal point towards the centre.



The composition of this matte painting is simple, but the abstract shape of the rocks and the use of the rule of thirds, adds a lot of interest. The reflections look very realistic, particularly the use of the dark shadows from the rocks cast on the water.



The atmospheric depth is effective here with the distant mountains a similar colour to the sky. The interaction between the bright sun casting on the rocks adds realism. Also, the light fog at the base of the rocks add further interest.

This research will be very helpful for my matte painting creation. I will incorporate elements I liked from these matte paintings to further the interest and realism. For instance, prominent light rays, interesting rocks with heavy greenery, atmospheric depth, the rule of thirds and dark reflections.



## Kong Skull Island

I carried out research into films to gather further inspiration. Kong Skull Island is a very helpful reference. The style of rocks are effective, they have interesting shapes and vegetation details that convey a jungle theme. I think these types of rocks would sit well in my matte painting. The level of atmospheric used in the shot is very effective. It helps to add depth and further interest which is something I will incorporate into my piece to help build the mood.



## The Lord of the Rings: Return of the King

To develop my idea further I looked at The Lord of the Rings films as it is a notable fantasy film series. I was inspired by this shot from the Grey Havens scene in Return of the King. This composition is very effective as the mountains and buildings lead the eye towards the opening in the centre. I particularly like the bright orange glow, this looks visually effective and helps tell the story that the boat is sailing towards the opening. I think the idea of having a small boat sailing to a destination at the horizon, could be a narrative idea and I will incorporate these ideas into my matte painting.





## Maleficent

I looked at concept art by Dylan Cole for the film Maleficent. This painting successfully portrays the fantasy theme and I will apply the techniques used to my matte painting. For example, the heavy greenery and vegetation, the towering and interesting shaped mountains in the background and the use of bright lighting to further the mood. The use of low fluffy clouds and atmospheric adds further interest and improves the realism, I will also use similar atmospheric. Lastly, I think this painting has a good sense of depth, particularly the hazy mountains in the background which I will reflect in my matte painting.





## Real Life References: Phi Phi Islands, Thailand

I used photo references of the rocks and mountains on Phi Phi Islands, Thailand to develop the look of the rocks in my matte painting. These rocks are a variety of shapes and have interesting details. They are covered in greenery, which coincides with my jungle and fantasy themes. The rocks also appear to be floating on the water which will sit well in my piece.





## Real Life References: Halong Bay, Vietnam

I also looked at Halong Bay in Vietnam. Similarly to Thailand these rocks have interesting shapes and are covered in greenery and vegetation. Adding texture to the rock could add interest to my matte painting. Furthermore, the reflections of these rocks in the water will be good references to use when I create reflections in order to obtain realism.



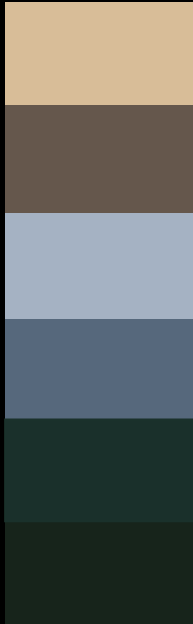


## Narrative Idea

I wanted my matte painting to convey a story in order to further the interest and give meaning to the composition so each element has a purpose. I was inspired by the Grey Havens shot from The Lord of the Rings; a small boat surrounded by tall buildings heading towards a clear opening. I decided to have dark stormy skies and tall mountains leading down the piece towards a small opening. I will place a small boat going into this opening to convey the boat is leaving the stormy environment and heading into calm and peaceful waters. I will convey this through warm and welcoming sunrays in the opening the boat is entering, conveying it is escaping the storm.

## Colour, Mood & Tone

The mood and tone of the piece will be mysterious, tranquil and fantasy. I looked at reference photos and at my matte painting research to see how these tones were conveyed. The ship, interesting lighting and prominent green tones will work well in conveying fantasy. The calm sea and low fluffy clouds will portray a tranquil mood and the heavy stormy sky and atmospherics will show mystery. The colour scheme will have greens for the vegetation on the rocks, blues for the sky and sea, brown for the mountains and a subtle warm orange for the light rays. I think this will work well as the warm colour of the sunrays will contrast the cold blue and greens.



## Mood Board: Lighting

Inspired by previous references my matte painting will have prominent light rays shining through the clouds. The sky will be overcast and stormy with interesting cloud shapes, I think adding these light rays will break up the sky and add further interest. The light rays will also cast on the mountains and sea below, this interaction will make the matte painting more realistic and cohesive.



## Mood Board: Composition

For the composition I will apply the rule of thirds to create an eye catching matte painting. Inspired by The Lord of the Rings, it will have tall mountains either side leading into the distance. The focal point; the boat and opening in the mountains, will fall on the intersecting lines respecting the rule of thirds. I was also inspired by shots from the film The Life of Pi to position the camera close to sea level. I think this up close framing will make the matte painting more immersive and will showcase the scale of the mountains.





## Stock Footage

I looked at a variety of sea stock footage to use as a base plate. I liked the calm sea in numbers three and four as they portray a tranquil mood. However, I felt these close shorelines wouldn't work for my idea as I want large mountains and a boat in the distance. I chose number two as it is far out to sea and the light reflections on the water will work cohesively with the light rays I plan to add to the sky.



# Development

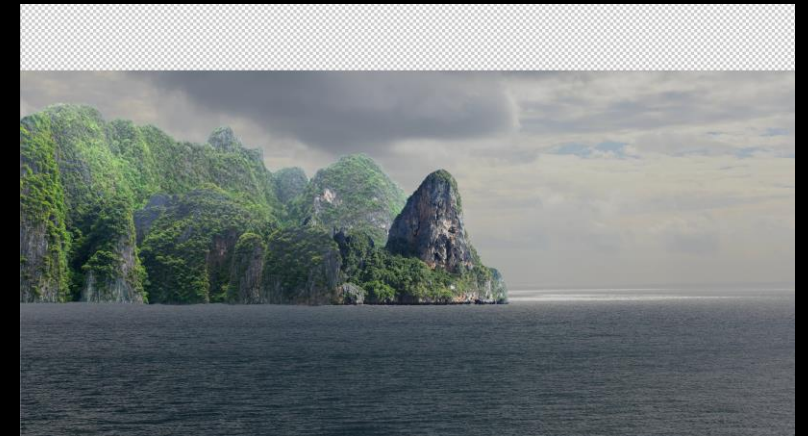
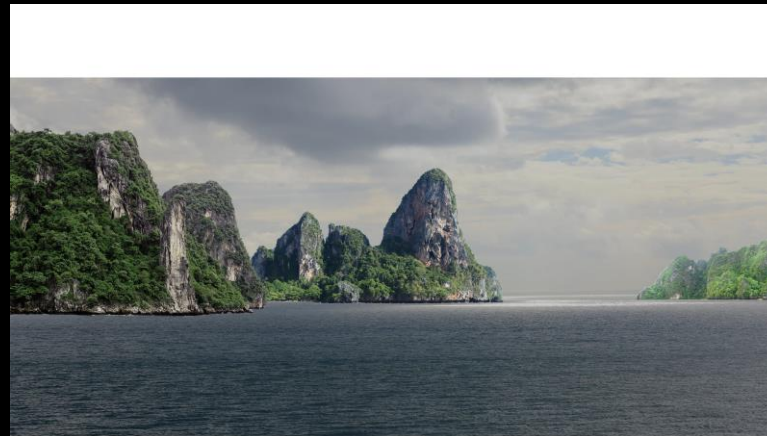
## Matte Painting Creation

### Version 1

I began the matte painting by adding a variety of large rocks and positioning them with rocks at the front leading back towards the horizon line. However, I found these large rocks in the foreground looked incorrect as the perspective didn't match the sea footage. I therefore reviewed the stock footage and saw at one point a birds flies across. Fortunately, this single bird allowed me to realise the shot was filmed from a distant high angle which explained why the large foreground rocks weren't sitting correctly in the shot.

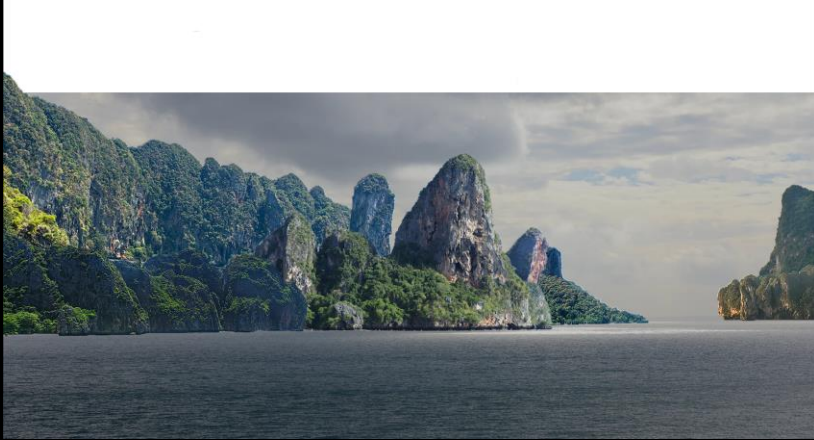


As a result of this, I positioned the rocks near the horizon line and scaled them down. This conveyed the rocks were in the distance. I experimented with creating an opening by adding rocks on both sides to reflect my narrative plan. I also added a large mountain behind the rocks which was effective in creating a sense of scale. I lowered the stock footage as the lower horizon line would fit the mountains better.

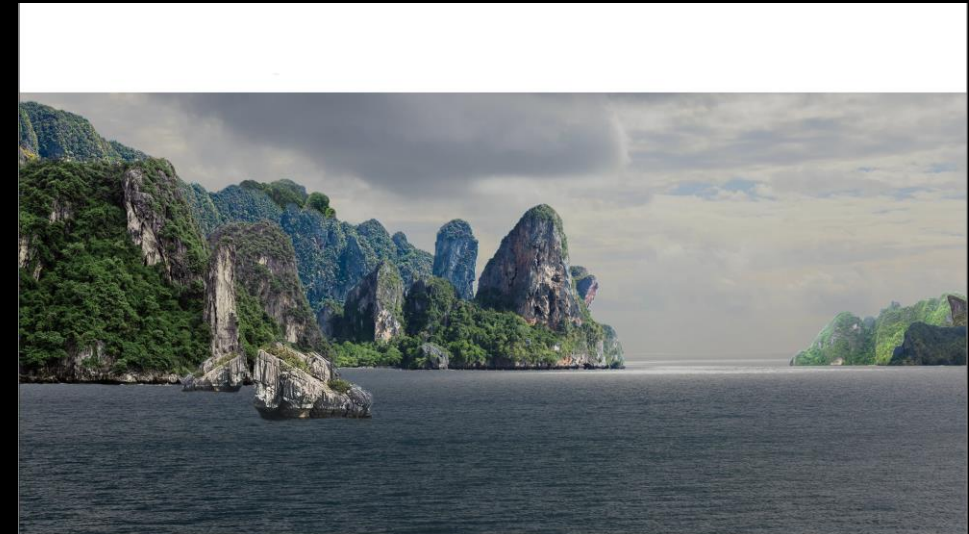
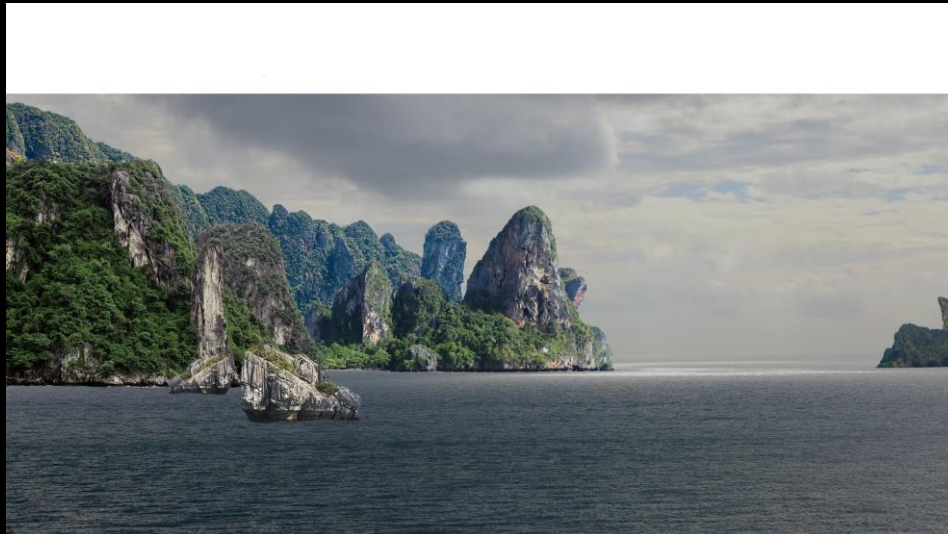




In order to draw attention to the opening I added a large mountain covered in greenery towards the back. Its clear slope was an effective leading line to draw the viewers eye to the opening on the horizon. However, I found it difficult to find other interesting rocks to fit the composition and I did a lot of experimenting. I felt the pointed rock was an interesting shape and worked well with the rear sloping mountain. But, when I tried to add more rocks to the left side they began to appear as one large mountain and I didn't have much depth in the composition. I found it difficult to create the right side and add interest as I didn't have much room on that side.



As I developed the composition I tried adding more rocks in the foreground to help establish the scale. However, I felt this made the composition busier. I also experimented with extending the sloping mountain and adding more spike shaped rocks. However, the more I added to it the more I felt this composition wasn't working. It was looking very busy and was lacking the depth I wanted.



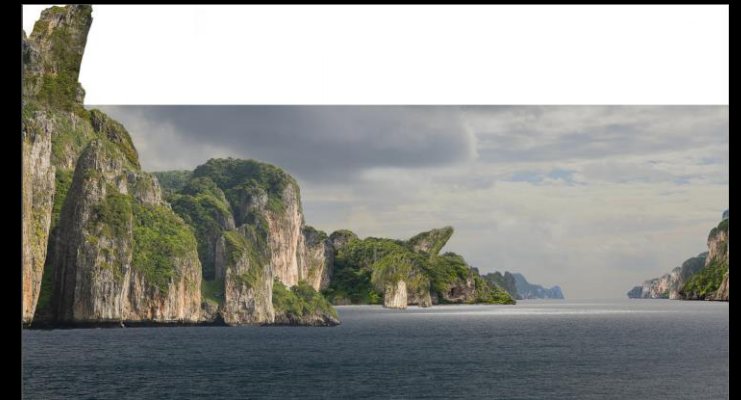
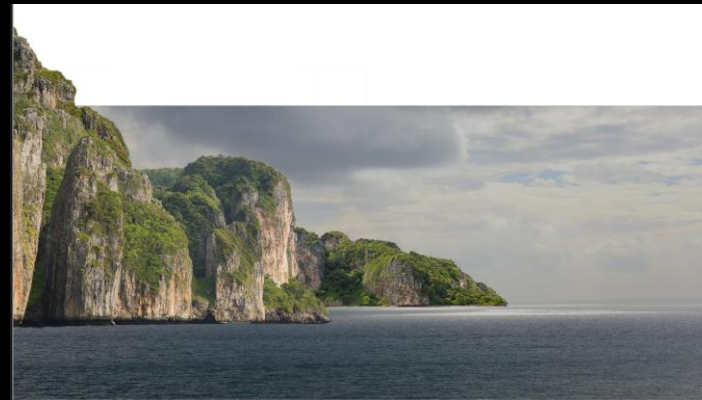
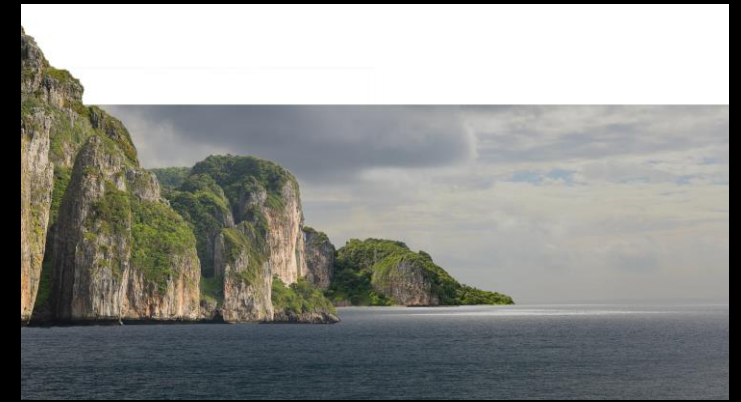
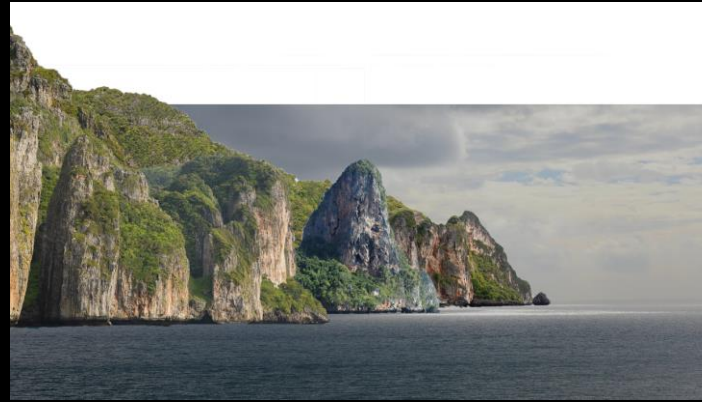


## Matte Painting Version 2

As I wasn't happy with my composition I went back to my research and discovered a photo pack of mountains from Thailand. These mountains and rocks would work well in my matte painting as the rocks had interesting shapes, were quite towering which coincided with my narrative and the green tone and small rock details had a fantasy feel.



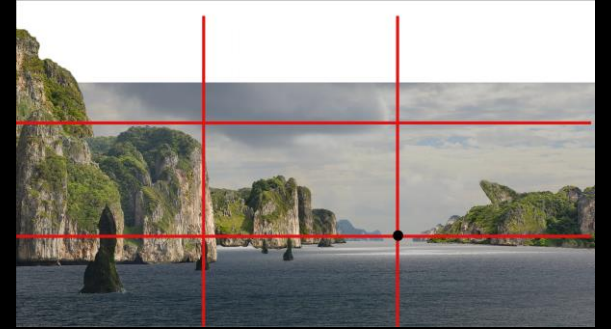
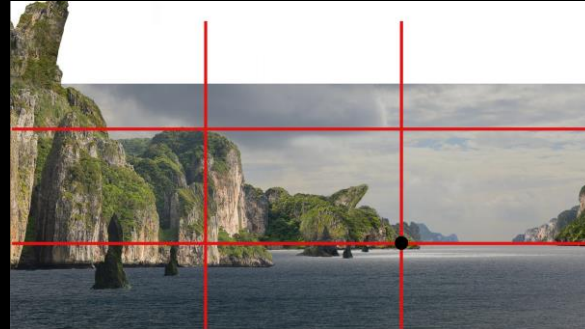
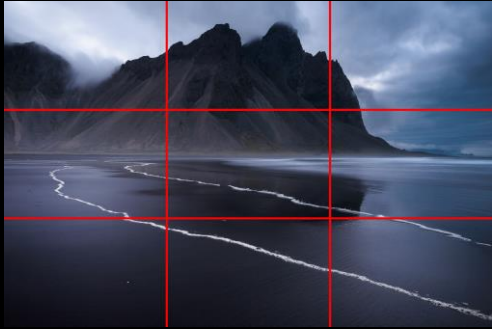
I added these rocks to the matte painting and began experimenting with the positioning. I originally kept the pointed rock but felt the style of this rock and greenery didn't match the new rocks. However, I did maintain the idea of the rocks sloping down towards the opening. I was able to position the rocks where they appeared separate to give the piece depth whilst maintaining the leading lines. I combined different photos to extend the mountains and add further detail. I also added some rocks to the right side and others in the distance. I believe this composition works cohesively to direct the viewers eye to the opening.





## Rule of Thirds

As I was reviewing the composition I felt the eye was not naturally drawn to the opening where the boat would be. To overcome this problem I referred to my research on the rule of thirds in order to improve the composition. I added a grid and placed a black dot where the boat would be. This showed the mountains on the left were too far over making the composition feel unbalanced. To fix this I rearranged the composition and added different mountains in order to equal out the two sides. This left a good opening and clear path for the ship that respected the rule of thirds. I think this change was very beneficial in creating a composition that is easily interpreted by the eye, has lots of depth and has leading lines due to the sloping mountains meaning the mountain opening is the focus pull which coincides with the narrative.





## Sky

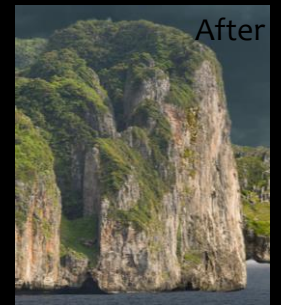
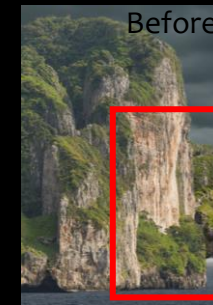
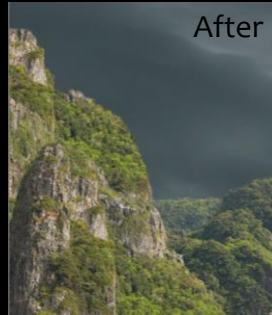
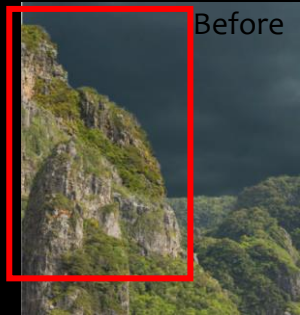
When considering a sky I looked at a variety of stormy skies and looked for interesting clouds, colours reflecting the matte painting and complimenting the perspective and also furthering its depth. I found it very hard to find a sky with all these things. Therefore, after choosing a stormy sky with blue and grey tones I altered it to fit these requirements. I duplicated the sky and shrunk it down positioning the cluster of prominent clouds above the mountain opening and then blending the two skies together. I feel this worked well in creating depth in the sky which complimented the matte painting. I also added a light ray above the light patch on the water that was already there. This interaction between the sky and water furthered the realism and cohesion of the shot. I blended in another sky with small light rays poking through the clouds and positioned it in the distance above the opening. I think this worked well in conveying the narrative that the boat is escaping the storm into calm waters. The light rays draw the eye to the boat and mountain opening.





### Details & Refinement

In order to further the realism of the matte painting I refined the edges of the mountain layers using a small brush tool. I removed any white areas from the greenery and added small details to the rock edges to make sure there were no perfect straight lines from when it was cut out. I used a clone stamp tool on the mountain extension in order to improve its blend into the mountain, I think this worked well. I also combined three different rocks for the distant sloping mountain, I refined its overall shape and added a cave and rock details to further the interest. To further develop the rocks I decided to remove the greenery from the bottom of the mountain in order to make it stand out from the mountain behind. This was done using the clone stamp tool.



### Colour Grade

For the colour grade my goal was to match the mountains to the tone of the sky and sea. I used a combination of a curves and brightness contrast to darken down the mountains and increase the contrast. I used a hue saturation to desaturate the light green colour of the greenery and darken the rocks to reflect the dark sky. Lastly I used a selective colour which worked very well. I was able to select specific colour channels and remove the red tones from the rock and create subtle blue tones to match the sky. I also altered the greenery to a dark green which I think complimented the blue tones of the sky and sea. I then began creating atmospheric depth to improve the realism. I used a curves and lifted the black levels of the distant mountains. I think this worked well in furthering the depth.



### Light, Shadows & Boat

In order to create interaction between the sky and mountains I added shadows and light casts from the sky. I marked light patches in the sky and roughly marked where they would land. I used a curves and darkened the mountain down for the shadows and used a mix of the brush tool with a subtle blue tone from the sky and dodge and burn tools to add light and further shadows. I don't think this is completely accurate however, the light and shadow adds further interest and conveys the relationship with the sky. I also added the boat. I chose a classic recognisable boat so when it shrinks it still looks like a boat. I used a curves to lighten the black levels and a hue saturation to remove the red tones. I think the boat works well in the matte painting in creating narrative, furthering the interest and providing a clear focal point.



### Clouds & Distant Mountains

To finish the matte painting I added a selection of fluffy clouds throughout the mountains. The clouds required a lot of grading as they were stark white. I used a levels and brightness contrast to darken the clouds and introduce a grey tone. I also used a colour balance which was effective as I was able to add a subtle blue tone. Each cloud had a different grade and I alternated between clouds with more blue or grey tones to reflect the sky. I also had varying opacity levels on the clouds. I think the clouds were very impactful and added a lot of interest to the piece, furthering the mysterious and tranquil moods. I also added two distant mountains on either side. I coloured them the same tone as the sky behind, I think these mountains were a subtle way of adding more depth and worked well.

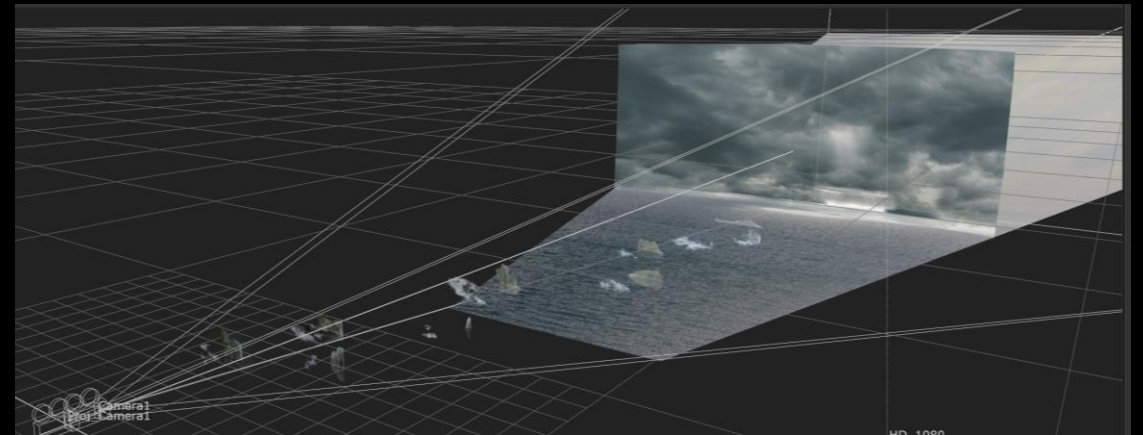
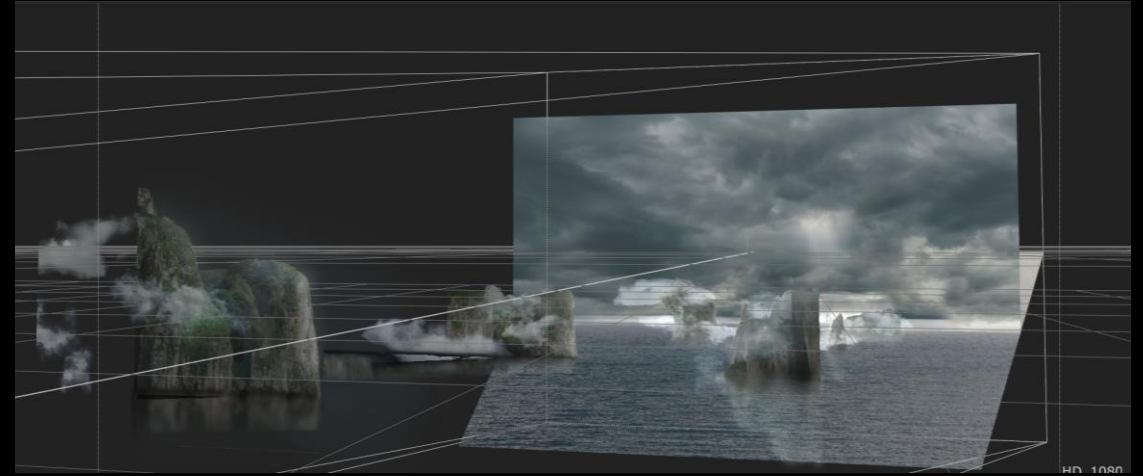




## Projection Mapping

### Projection Set Up

Once the matte painting was complete I brought it into Nuke and began the projections. I projected the mountains and cloud onto cards and the sky a sphere. I then added a camera move with a slow pan in to see how the projections were looking. Unfortunately the shot felt static as I couldn't have drastic camera movements because I was using cards. To improve this I added more space in between the cards to further the parallax which created more movement in the piece. I also found the camera move caused a gap between the rocks which I hadn't intended. To fix this I used a transform to lower the cloud layer to cover the gap and make it less noticeable which worked well.



### Sky Repeating Patterns

Following advice from my lecturer, I found there were repeated patterns in the sky where I had blended two skies together. To overcome this problem I went back to Photoshop and erased any overlapping areas and only kept the clouds I needed in the piece. I also used a clone stamp tool to refine some areas which worked well.



### Boat Grade

Once the shot was fully projected I also found the boat looked too dark compared to its surroundings as I wanted to portray it as far in the distance. To fix this I used a grade node to lighten the black point. This greatly improved the boat's integration into the scene.





## Reflections

To create the reflections in the water I used a mirror tool and blurred the layer to create subtle reflections. I think this method worked well however the reflections were too harsh. To overcome this I used a ramp to create a gradient which greatly improved the realism. I also added a grade to darken down the reflections. I also felt the reflection on the front mountain wasn't dark enough to sell the illusion it was on the water. To improve this I brought in a rough shadow I had drawn in photoshop and projected that onto the reflection. The change in colour is subtle but I think the realism is improved. Once I played through the shot I spotted an error, unfortunately when the camera moved and more of the mountain was revealed the shadow didn't cover the whole mountain. To fix this I modified the transform and stretched the shadow and applied more blur.



## Volume Rays & Cloud Movement

When I viewed the shot I felt it didn't have enough movement to bring it to life. To improve this I decided to add volume rays to the three light rays. I set the flicker to animate very minimally to improve the realism. Although very subtle, I think this was effective in adding further interest and movement to the piece. To further this movement I also animated the clouds to move using the transform. I set the clouds to move at different speeds and different directions. However, when playing it back I felt it looked quite messy and didn't coincide with the peaceful mood I wanted. To improve this I watched the stock footage and found the water was being blown towards the right. I therefore set the clouds to move to the right which worked well. I maintained having the clouds at different speeds but made sure all the movement remained subtle and realistic.



### Boat Movement & Finishing Touches

As I watched the shot I found the boat looked very static. To improve this I animated the transform. I set the rotate so the boat subtly rocked back and forth to give the illusion it was being effected by the waves. This improved it however, I felt the boat still didn't look quite right as everything in the shot was moving forward but the boat was in the same position. Therefore, I animated the scale of the boat to reduce as the camera pans in. I think this works very well, although you don't really notice it when the shot is playing, without the scale the boat doesn't fit in the scene properly, therefore this scale improved it greatly.

To further the interest and improve the realism of the camera zoom I added very minimal camera shake. To finish the piece I added subtle grain, and used a grade node to darken the shot slightly to further the mood and make the light areas stand out.

Once the shot was rendered out of nuke I brought it into premier and added music. I have chosen the song Elysium from the Gladiator soundtrack. I think this song fits my piece, it has a slow pace that reflects the camera movement with a sombre women's voice singing in a different language. I feel the song works well in furthering the peaceful, mysterious and fantasy tones of my piece.

Before Grade: Beginning of shot



After Grade: End of shot





# Evaluation

Overall, I believe I was successful in creating a fantasy themed matte painting set extension. Through applying the rule of thirds and leading lines, I feel the piece has effective composition that is pleasing to the eye and draws attention to the focal point. I think the perspective is accurate and cohesive to the stock footage and the lighting and reflections work well in adding interest and realism to the piece. I believe the narrative of a boat escaping a storm is effectively portrayed; the stormy sky and tall mountains contrast the clearing with calming sun rays which the boat is heading towards.

I believe my finished matte painting looks effective however I did find it challenging to make. The rocks I chose had a fantasy feel with interesting shapes and lots of greenery. The photo pack was useful as I could select many rocks from the same pack which meant the style of rocks was cohesive and most of the colour and lighting were similar, making it easier to effectively integrate together. However, as the rocks were similar I also found it difficult to add variety. I think the sky is very effective in the piece. The stormy clouds conveyed the narrative and the pockets of light added a lot of interest. I think the use of scaling down a duplicate of the sky so there were small clouds above the opening was an essential step to making the sky successful as it coincided and furthered the depth. However, having two skies caused a lot of repeating patterns that took time to improve. Furthermore, I believe the mountain colour grades work well in reflecting the sky and improving the realism of the whole piece. Adding shadows and pools of light onto the mountains was effective in creating an interaction between the sky and mountains. However, I did this by hand, which I found difficult and I don't feel it is entirely accurate. Through lifting the black levels of the distant mountains I believe the matte painting has good atmospheric depth which furthers the realism. Moreover, the clouds were very successful in adding further interest and by grading them similar colours to the sky it furthered the cohesion between the sky and mountains.

In my opinion the projection mapping was successful. I achieved a good amount of parallax between the layers which brought the matte painting to life. However, as I was projecting the mountains onto cards I was restricted to only have a subtle camera zoom. In future I would try modelling the front mountain so I could have more movement in the piece. I found the reflections challenging to make but ultimately I think they seem quite realistic. The use of the ramp was a big part of this as I was able to fade out the reflection reflecting how it would in real life. To improve the reflections in future I would try and incorporate more of the water ripples as some of the reflections are looking a bit soft. I think the light rays are successful, particularly for drawing the viewer's eye to the boat focal point which helps to convey the narrative. The subtle animation of the light rays adds further interest but I could improve it by incorporating a fog layer for the light to interact with, to make it seem more realistic. The cloud movement is instrumental in bringing the piece to life. I struggled with deciding on the speed of the clouds and finding the balance between realistic, subtle movements and larger, more noticeable movements. Lastly, I think the boat movement is effective, as the side to side rotation creates a realistic interaction between the boat and the water. Furthermore, the use of scaling down the boat as the camera zooms in is subtle but essential for the boat to look real in the shot and convey the camera and boat are moving forward.

To conclude, I am happy with my final piece. I think the intended narrative is portrayed clearly and the visuals reflect the inspiration shot from The Lord of the Rings. I think the composition of the matte painting is effective, following the rule of thirds worked well in enabling me to create a composition that is easy to read and has a clear focal point. The project has enabled me to improve my matte painting and projection mapping skills. For example, I particularly believe the creation of the sky with multiple light rays was effective in adding interest, and the level of parallax and movement of the clouds and boat brought the matte painting to life. I think the piece comes together well with the music and successfully portrays the themes of fantasy, mystery and tranquillity.

# References

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