MODULE TEN: CHARACTER SCULPTING | BODY

eve ryan

Module 10: Character Sculpting - Body

In this brief, we have been tasked to develop a character body using Maya, Zbrush and Adobe Substance Painter. I will acknowledge and comprehend the skills needed to use the software and produce an outcome. I will produce a high poly model, a low poly model, UVs and baked textures at a 2048x2048 resolution. For this character, we have to create a backstory for them. Whether they be an antagonist, NPC, or the protagonist. I will research different colour theories and present them alongside the themes of my character, and well as perform in-depth research on the anatomy of my character, including both the bone and muscle structure.

Accommodating Change in the Game Industry: Gamers with Disabilities

Having disabilities can crush the enjoyment of video games. People with conditions such as being profoundly deaf, blind, cerebral palsy, colour blindness and amelia can not get the full enjoyment out of video games the same way people without those disabilities do (Gaming For All: How The Industry Is Striving To Accommodate Disabled Gamers, 2021). Fortunately, some are ready to actively use their time to step up in the games industry and improve these conditions.

The Ablegamers charity started as a forum for EverQuest around 2003. The group has gone through many transformations over the years, from a knowledge centre for the impaired to its present status as a charity and nonprofit organisation for game producers and developers. (The AbleGamers Charity, 2021)

Steven Spohn is the COO of the AbleGamers Charity, an award-winning writer, and a disability activist. Spohn was born with spinal muscular atrophy and needs to wear a revamped headset that allows him to control movements during gameplay by moving his head in the correct direction. The commitment of game creators to focus on usability, according to Spohn, is the most significant advancement in-game accommodations in the last decade (Gaming For All: How The Industry Is Striving To Accommodate Disabled Gamers, 2021). Spohn remembers his charity Ablegamers taking a documentary crew to a game developers conference in 2009 and questioning over two hundred developers if they considered individuals with disabilities while creating games. Just three of them replied saying yes. One developer just walked away laughing (Gaming For All: How The Industry Is Striving To Accommodate Disabled Gamers, 2021).

Spohn has since said that since that time, there has been a great shift in the attitude of game developers and that his non-profit organisation is not the only one with the same goal anymore; and is not the only one in direct contact with game developers

(Gaming For All: How The Industry Is Striving To Accommodate Disabled Gamers, 2021). A woman named Cathy Vice, an extremely well-known game critic and disabled persons' advocate suffers from epilepsy and has previously spoken out about how far the industry has pushed for gaming accessibility. "Five years ago, it was uncommon to see developers, indie or otherwise, include accessibility features. Since then I've spoken with hundreds of developers, including directors at major third-party studios, about accommodating players like me." (Game accessibility guidelines | Avoid flickering images and repe titive patterns, 2021)

A company named EA has been great in helping disabled players, with games such as Battlefield, Madden NFL 17, Fifa and Sims. The controls are completely customizable and also have intricate settings for people who suffer from being colourblind. There is also a hotline where players can send ideas as well as reviews of the disability controls feedback (Gaming For All: How The Industry Is Striving To Accommodate Disabled Gamers, 2021). NetherRealm studios were praised for including really obvious audio cues (which can be disabled) within the game Injustice: Gods Among Us to help players with vision-related disabilities during fights (Straub, 2021).

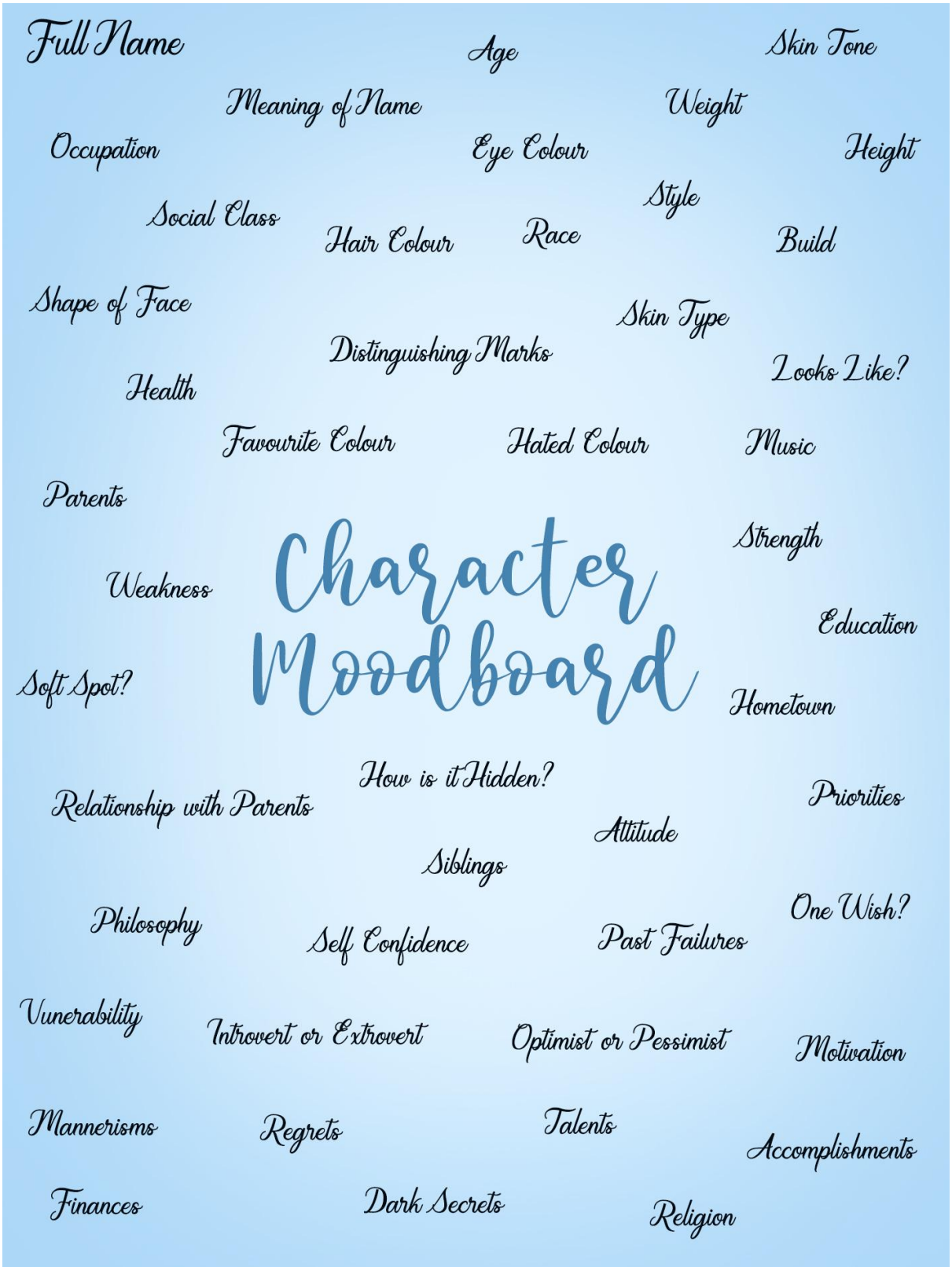
Overall, most game companies are not perfect and could work harder and include more for those who need accessibility controls, however, there have been a lot of improvements and additions added to games over the last decade to accommodate those who need it. Those who push for change in the community are making an amazing impact and are ready for the slow and steady journey ahead, working with developers to keep pushing for even more change.

Moodboards for my Sculpt

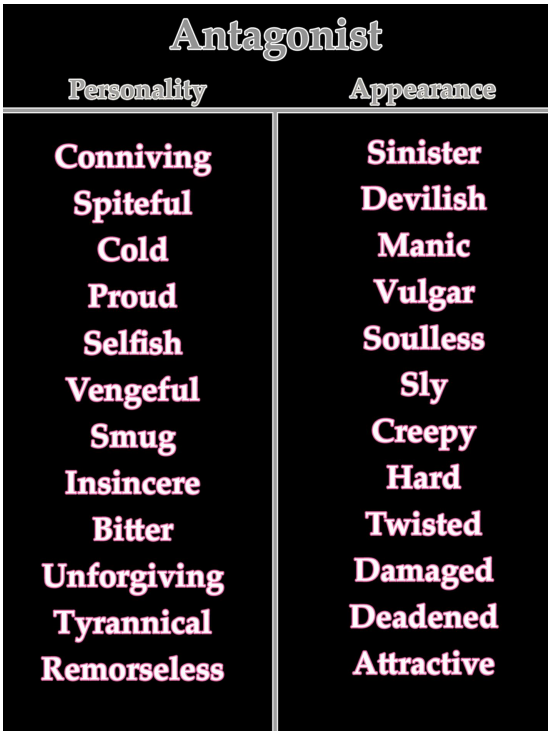
(World of Warcraft, 2021)

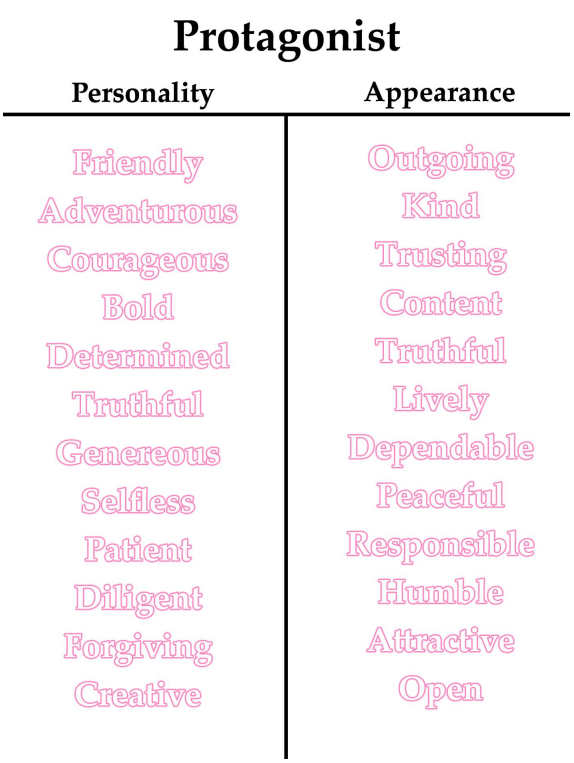
(World of Warcraft, 2021)

Within these moodboards, I wanted to include a series of in-game mounts, as that is something I think would be interesting to possibly create a 3D model for. The use would be an in-game creature used for possible flight paths or just a personal mount. In-game mounts range from very small designs such as bikes and mechanical transportations to magnificent ethereal beasts, which is what I want to design within this brief. Even if I decide to make a creature that does not serve the purpose of amount, and maybe just for promotional material, it's helped me to look at these creatures as they are well designed and made to be aesthetically pleasing so that they are bought. I also have to create a backstory for my character, so I need to research the lore and meaning behind the mount/creature I need to design.

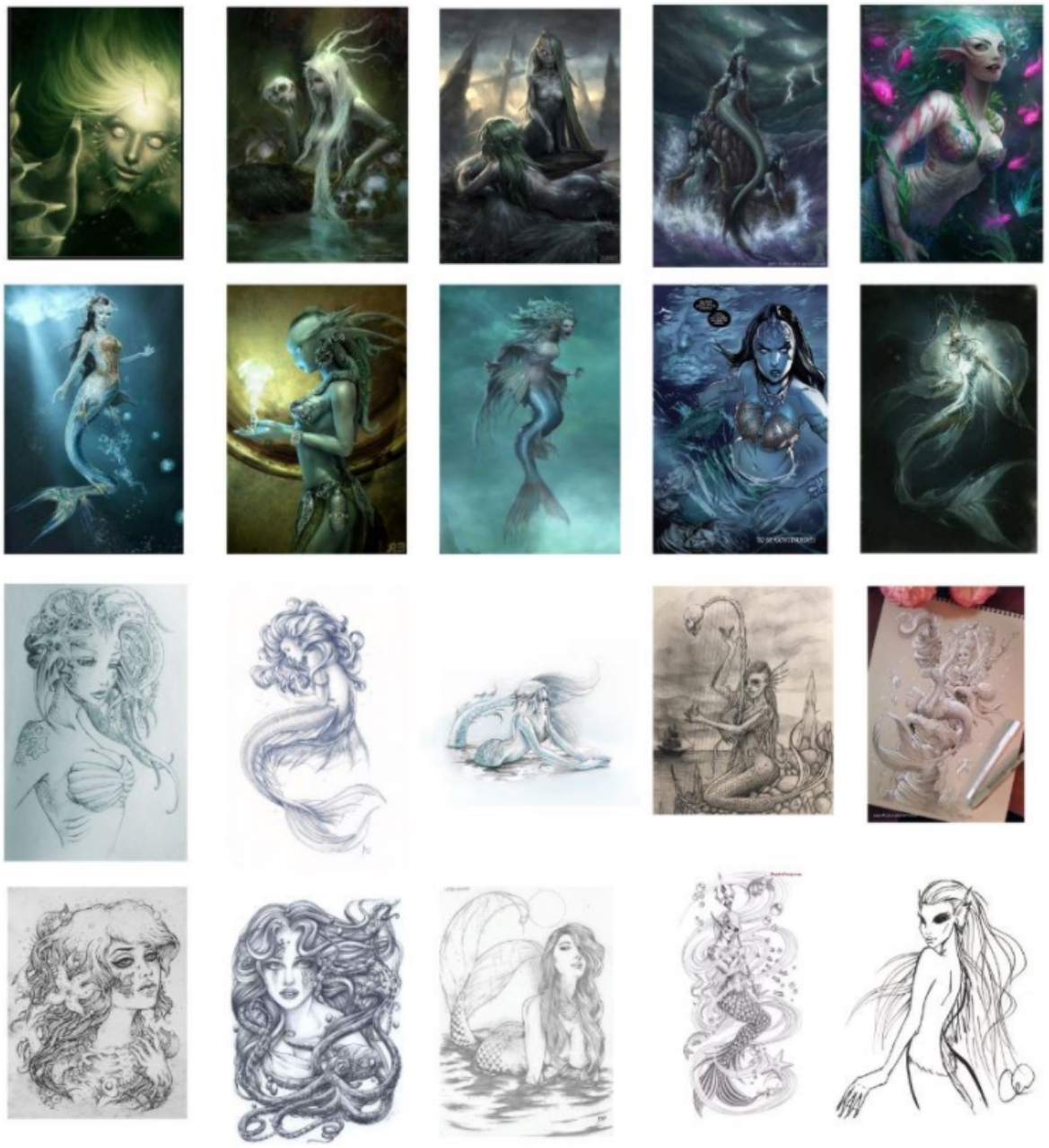

Full Name
Age
Skin Tone
Meaning of Name
Weight
Occupation
Eye Colour
Height
Style
Social Class
Hair Colour
Race
Build
Shape of Face
Skin Type
Distinguishing Marks
Looks Like?
Health
Favourite Colour
Hated Colour
Music
Parents
Strength
Character Moodboard
Weakness
Education
Soft Spot?
Hometown
How is it Hidden?
Relationship with Parents
Priorities
Attitude
Siblings
One Wish?
Philosophy
Self Confidence
Past Failures
Vunerability
Introvert or Extrovert
Optimist or Pessimist
Motivation
Mannerisms
Regrets
Talents
Accomplishments
Finances
Dark Secrets
Religion

In this mood board, I brainstormed some ideas of what I could include in my character's backstory. There are certain ideologies and factors which are crucial to creating an interesting character within a game.





Depending on whether I decide to create an antagonist or a protagonist, this will have to slightly alter the appearance of my creature when texturing. These can be minor differences such as the eye colour, facial expression, and colour palette. Often, cold colours are used as undertones in villainous characters, as opposed to warm tones in protagonists. Villains can also be attractive, however in a more rugged way. Protagonists are usually more attractive and look trusting, as opposed to the uncertainty in villains.



A great example of an unsettling colour palette within antagonists would be a siren. I enjoy the deep sea greens, murky yellows and small clusters of a deep ocean blue. I feel as though a siren may be fun to design as an antagonist, much like Ursula from The Little Mermaid however more stylised and younger.

Character Design

The process of creating memorable characters within video games can be challenging, however, extremely rewarding to game developers and publishers. The process of creating a character which is unique, relatable and interesting requires a lot of attention to detail, and a lot of thought behind the face of the character.

I conducted some research and found a twelve-step guide (Pope, 2021) on character development, as I thought it would be useful for creating my character and thinking of their purpose. The first step was to create a background, which I can understand, as a person's background can guide their path in life, towards good or evil, as well as create certain aspects of their personality such as things they are scared or not scared of. In a character's background, I could talk about their life as a child, their parents, motivations and opinions.

The second step in the guide was to think about my character's strengths and weaknesses. Depending on what my character is good or bad at determines their reactions and actions in certain situations (Pope, 2021). Certain weaknesses can build up their story, and journey within the game, so the character is not a means to an end. Pope also says that developing these strengths and weaknesses helps us understand the character before we begin writing them, or in this case, designing them.

Thirdly, Pope suggests creating certain habits within the character, as unique ticks are memorable to an audience and make the character seem more realistic (Pope, 2021). A good example of this would be Captain Jack Sparrow in Pirates of the Caribbean, his quirky movements and wavy hands are an instantly recognisable mannerism within pop culture.

Another character development exercise Pope suggests is to give the character realistic motives. Regardless of if the character is good or bad, or even an NPC, they need an interesting reason for existence (Pope, 2021). If the character has no motive or a motive that doesn't make sense, it will make the game not immersive, and seem silly.

Lastly, Pope suggests avoiding stereotypes for multiple reasons (Pope, 2021). Stereotypes can make the character seem repetitive and done before, which is not something I want. Stereotypes can also be harmful and it is important as a game designer not to offend any group of people in the audience.

Colour Theory

My first idea for a character body I want to draw inspiration from is the Kyrian race from the game World of Warcraft. One of the reasons I want to draw inspiration from this character is because of the colour palette, and magnificence of the character. The blue and gold hues speak angelic and mythical which is a theme I enjoy and like the aesthetic of. I also really enjoyed the look of wings on characters like these. In my last brief, I made a start at trying to design wings and the outcome was nice, however, I wanted to use feather alphas in ZBrush to create more of an angel wing in the future. I may draw inspiration from this character when designing my character, and I have already studied human anatomy so the skeletal construction in my drawings would not be a challenge.

(World of Warcraft, 2021)

I created a small chart so I can see all of the details I like about the character in one place. I added a small colour chart, some key elements of the character, the typography and the textures used. This will help me when designing, as I could make a chart like this and base a character around it. All of the features which are in one place are important so I do not stray from my design. It's also a really nice way to see if the colour will clash or work together, as I had some trouble last term when trying to decide the

skin and hair colour for my character when I 3D modelled her. I went through multiple different hairstyles and wasted time deciding which colour worked best. If I do my colour theory in more depth, this may help resolve that issue, as I can refer to my colour chart to see what works and what does not. I drew inspiration for this chart from colour theory illustrations on Pinterest.

For my next chart, I decided to do a mermaid/siren creature I have been thinking of doing. I looked into what colours are most commonly found in pictures of mermaids and sirens, which tends to be a lot of sea greens, ocean blues and brick reds. Seaweed in the hair or on the body tends to be a common feature, usually followed by a cluster of fish nearby. For the textures, there are normally detailed scales, slimy seaweed, some kind of blacked water to represent how deep and far below the shore they live, as well as the light rays from our world leaking through. I enjoy the natural colours of the mermaid chart as opposed to the extremely fantastical royal blues and golds of the angelic character.

Siren
ANTAGONIST

COLOURS

ELEMENTS

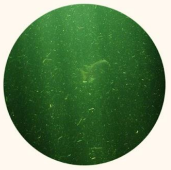
TYPOGRAPHY

Mermaid
MERMAID
abc

ELEMENTS

CHARACTER

TEXTURES AND PATTERNS



(350 Mermaid Art ideas, 2021)

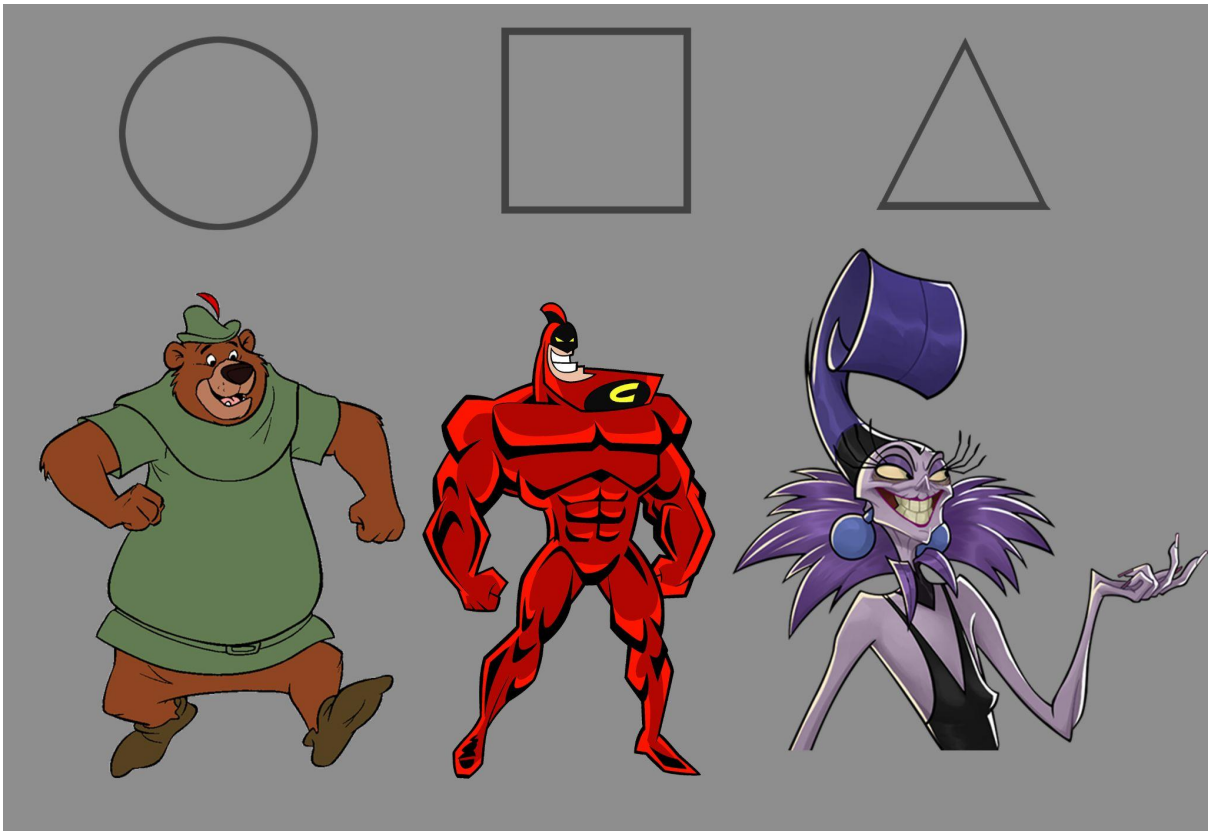
A creature I have always been fascinated with would be a mythical dragon, usually shown in Chinese artistry. I enjoy the colour schemes which come with the art depicting Chinese Dragons. The usual colour schemes do vary as not all of the dragons are the same colour, however, they can vary from gold to green to red. There are different styles of dragon however they all share common features such as the MaineChinese, long wispy tail and some sort of elemental feature like the earth, air, fire and more.

(590 Chinese Dragon ideas in 2021, 2021)

I think a dragon would be very interesting to sculpt, and similar to sculpting a mermaid tail. The only downside to sculpting a chinese dragon however would be that there is no real anatomy to reference aside from fantasy designs of the bone structure.

Shapes in Art

Different shapes in characters can communicate a lot of different emotions to the audience. Round, soft shapes can connote safety and approachability; shown in smaller chubbier characters in television shows. Square shapes represent strength and power, much like superheroes. Very angular and pointy shapes can be very sinister and unsettling.



Here is an example I made of characters that came to my head when thinking of this theory. For my dragon, I will be using a mixture of different shapes however I will keep the body very soft and curvaceous, the only angular spikes being the horns and teeth to not make my dragon look too friendly nor too intimidating.

Chinese Dragon History

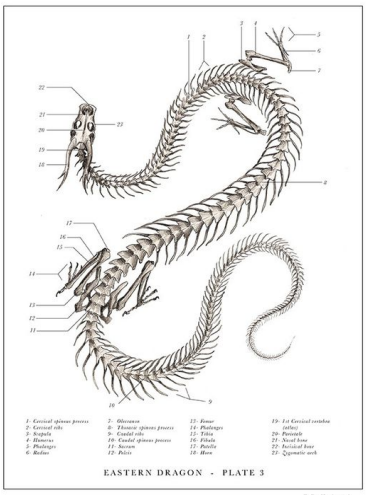
Within China, Chinese dragons are a symbol of power and are frequently represented in Legends, festivals, astrology art and more. The Chinese Dragon is also one of the twelve zodiac signs within the Chinese Zodiac Calendar (Planet, 2021). They are symbols for good luck, however, they were also a symbol for the Emperors of Ancient China, as these rulers were known as the 'sons of dragons' which meant that commoners could not have depictions of these dragons within their own home (Planet, 2021). Another reason for rulers being the embodiment of the Chinese Dragon can be because the creature was regarded as one of the four sentient animals, the dragon, the phoenix, the unicorn, and the tortoise (Planet, 2021).

In general, the population assumed that the dragon was a symbol of good fortune. In addition, old farmers believed that dragons would bring their crops necessary rain and nurture (Planet, 2021). The dragons were also believed to be capable of summoning strong winds, hailstorms, thunder, lightning and tornadoes, which even today are known as 'the whirlwind of the dragon'. Interestingly, all the earliest representations of Jade dragons are circular (Planet, 2021).

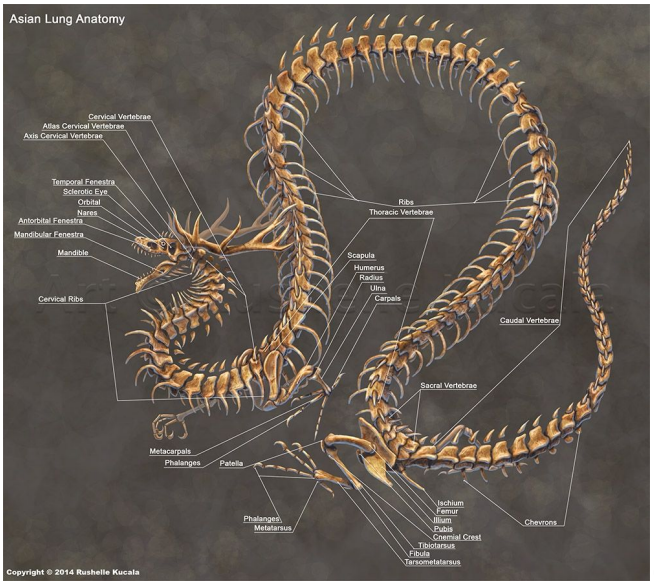
In ancient rural areas of China, a dance for the dragons was performed to entice the beast to be generous in delivering rain, as well as a parade in which a massive image of a dragon was borne on a wooden frame made of paper or linen (Planet, 2021). Little pottery dragons or flags with a dragon rendition and handwritten prayers requesting rain were also used.

The dance ceremonies also served another reason, which was to ward off sickness, particularly during outbreaks. The dragon dance has become a staple of rural celebrations and is now synonymous with Chinese New Year festivities (Planet, 2021). The connection between dragons, rainfall, dance, and regeneration could all be traced back to shamanism, which was popular in ancient China (Planet, 2021).

Anatomy

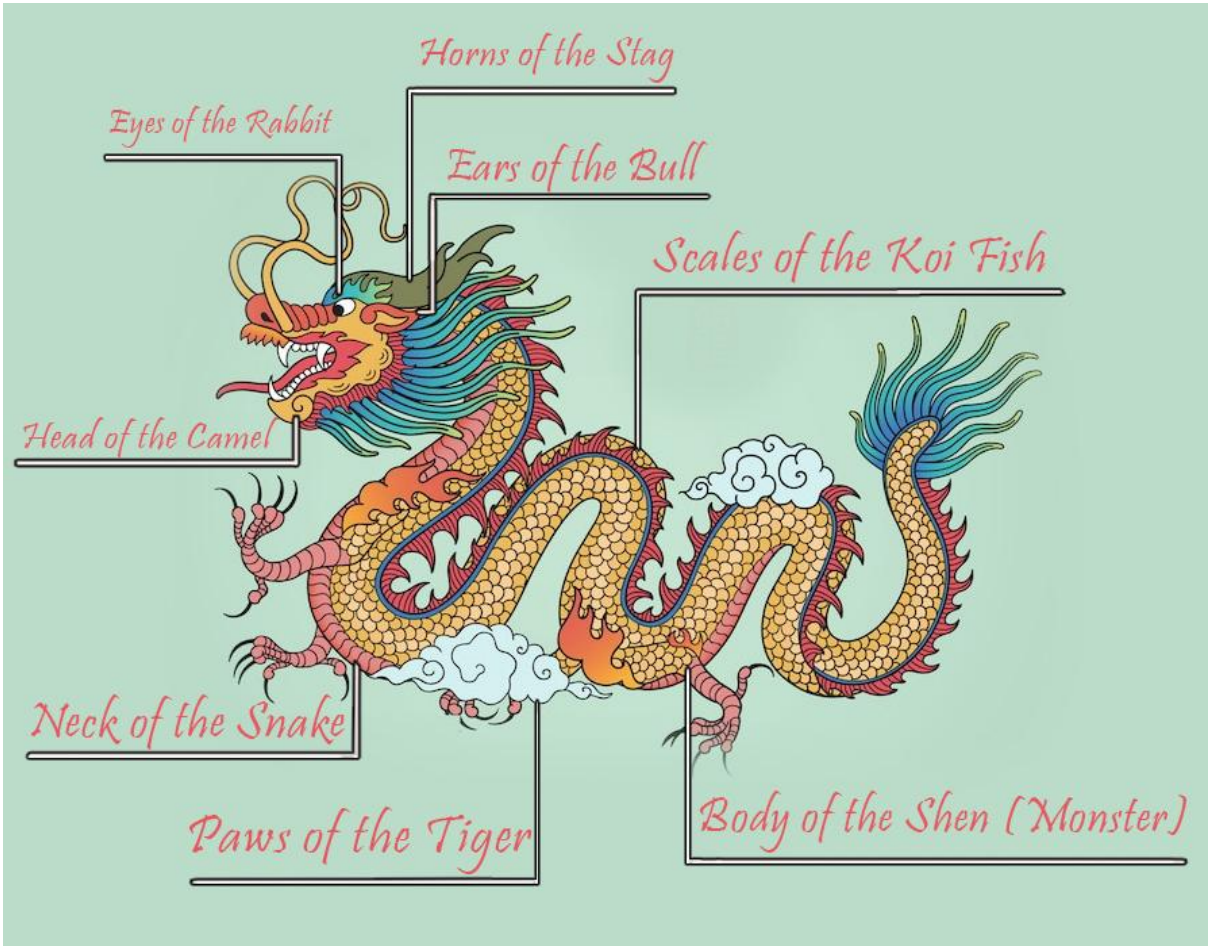


(Eastern Dragon Skeleton Anatomy, 2021)



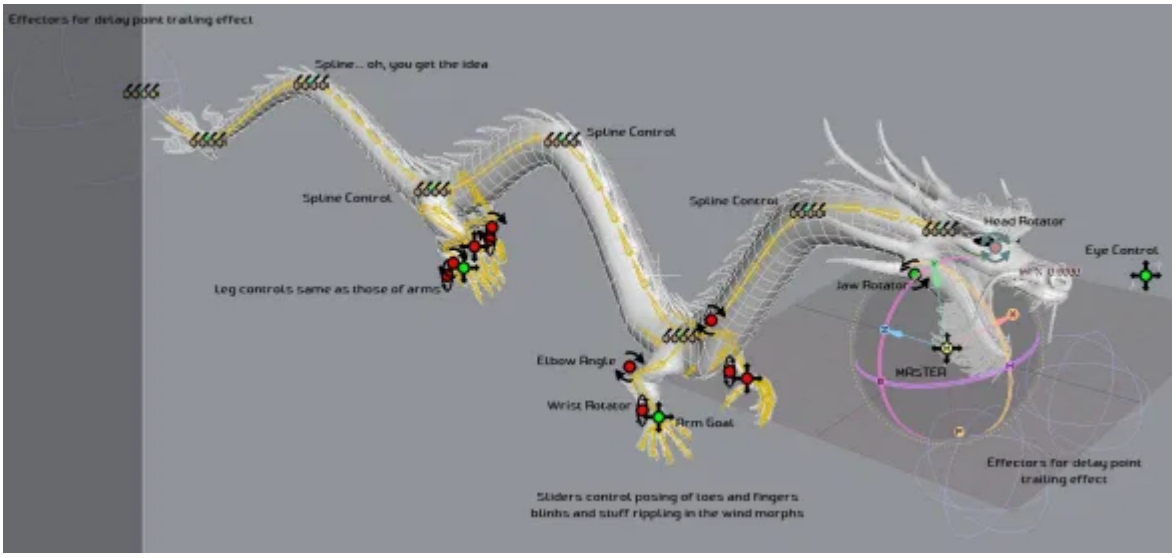
(TheDragonofDoom, 2021)

When sculpting a creature, anatomy is extremely important to understand. The Chinese Dragon I want to sculpt has an extremely long spine, many ribs, scapulas and tail bones which all move and bend together in a slinky like fashion. When sculpting the shape of my dragon I will ensure to follow the shape of this curved spine and the way the legs attach.



(Planet, 2021)

The structure of the Chinese Dragon consists of eight main features, as I labelled in this diagram. Whilst sculpting my dragon I'll remember to keep these features present in my sculptures, however, I may tone down some of the uglier features to keep the dragon appearing more magnificent.



(How to Train (Rig) Your Dragon, 2021)

Here is an example of how someone rigged their Chinese dragon model. If I decide to use my model as the amount of an in-game feature, this would be a great reference for me to use.

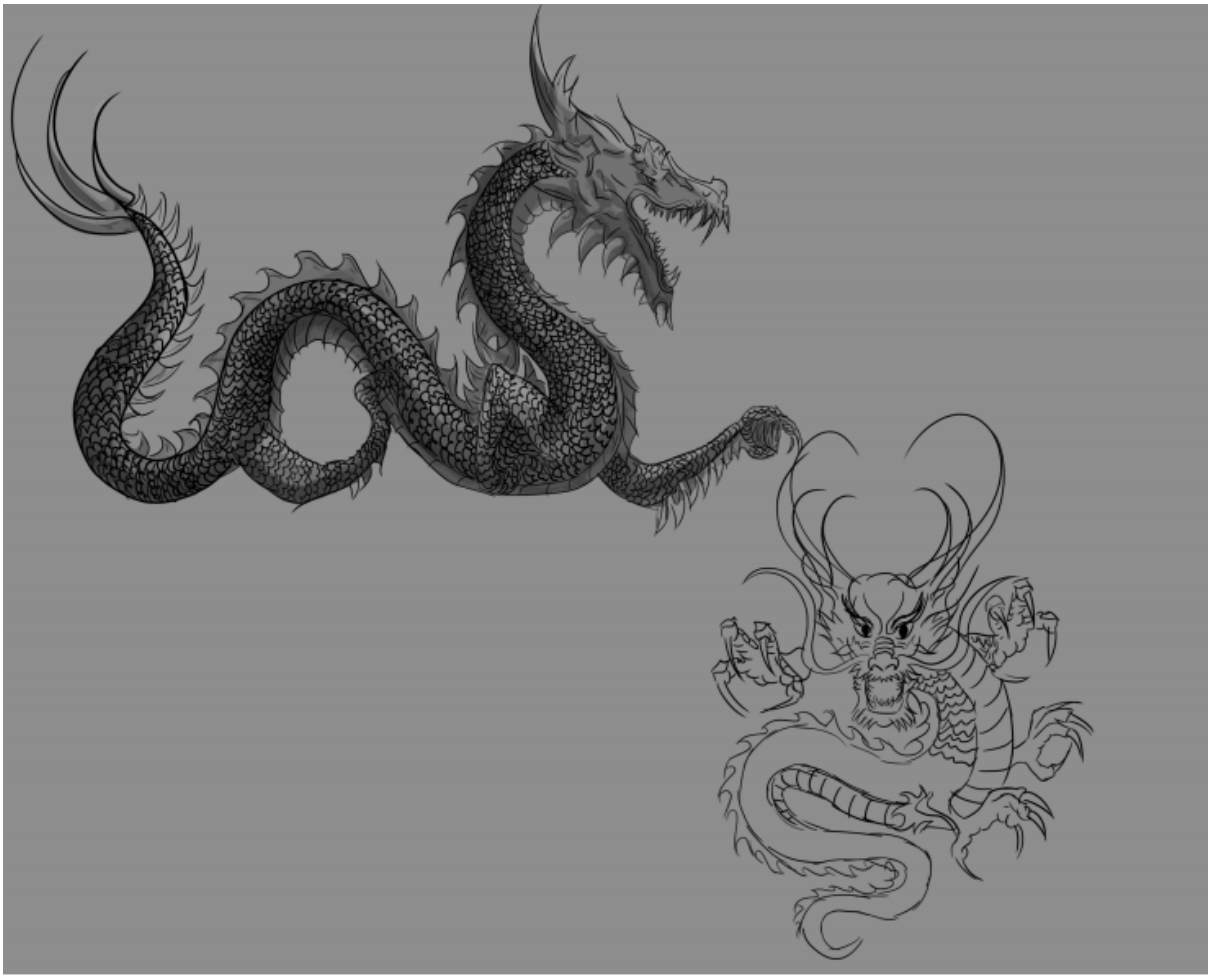
(590 Chinese Dragon ideas in 2021, 2021)

A lot of Chinese Dragons look very different however all share the same body shape. The mane which runs down the centre of the back also remains, however some dragon manes are spikes, some cloud-like. The colours also vary depending on the type of dragons, such as ones that bring fortune, power or other attributes (Planet, 2021). I intend to research some colour

schemes which I am most drawn to, comparing objects and other things to find the specific hues and tones I want to use.

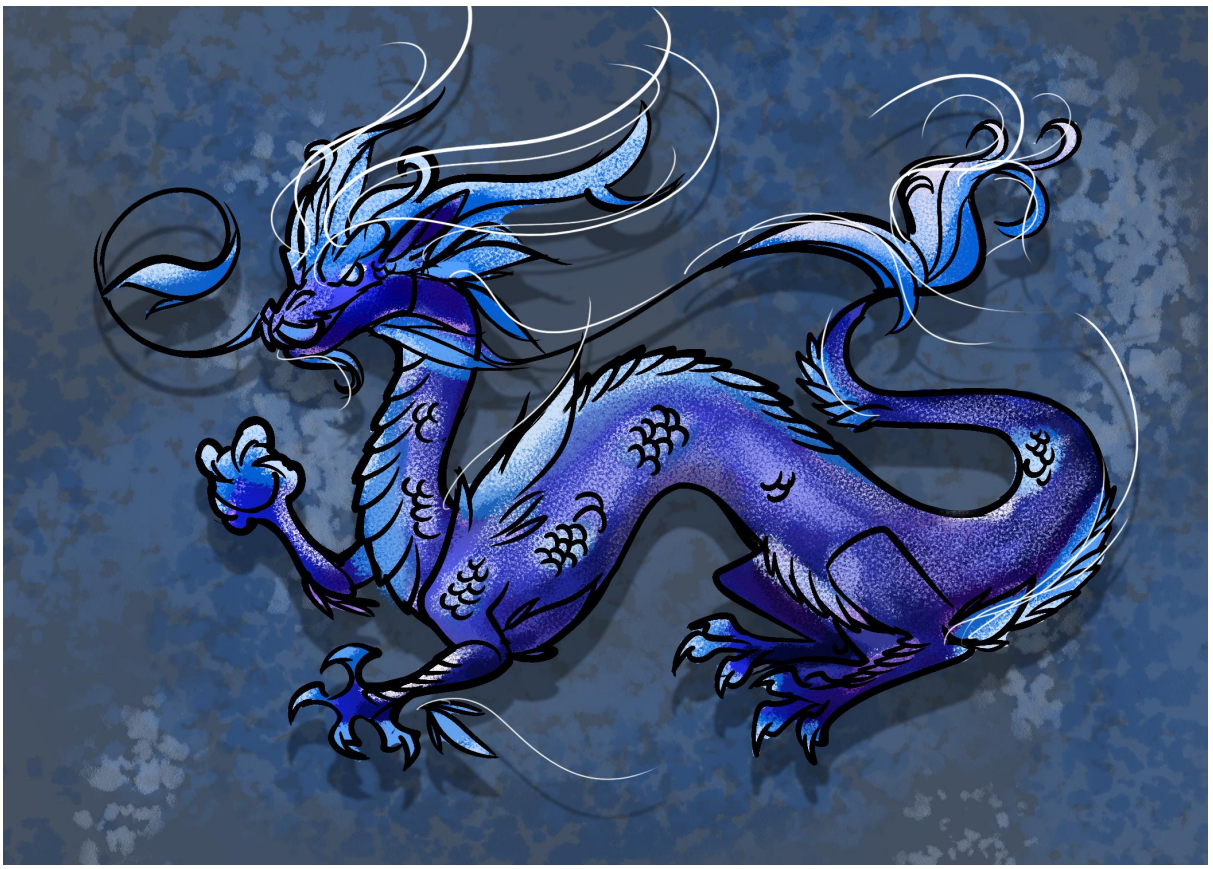
Drawing inspiration from this colour chart I will produce three different concepts following the palette created by myself. I will create the outline and colourize the middle of the dragon in photoshop which will hopefully help me decide what colour scheme I want to use to texture my Chinese Dragon.

Concept Art



My first rough sketch was developing the shapes of the body whilst referencing my anatomy. I also marked out what horns and facial shape I would want from the front and side of the dragon. The target audience for this type of dragon would not be thatoung children, more so ages from 12-18, promoting a mythical story game or something of the sorts.


Red
Gold



I really enjoy all three of the colour schemes, however, I'm drawn more towards the green and blue dragons than the red. As I do enjoy the red and yellow traditional colourisation, I feel as though it may be stereotypical and overdone in the design of Chinese dragons, and it may stand out more choosing the other colours. If I choose the green dragon, I will include features based around the sun and clouds, however, if I choose the blue dragon I will include moody features such as lightning and thunder.

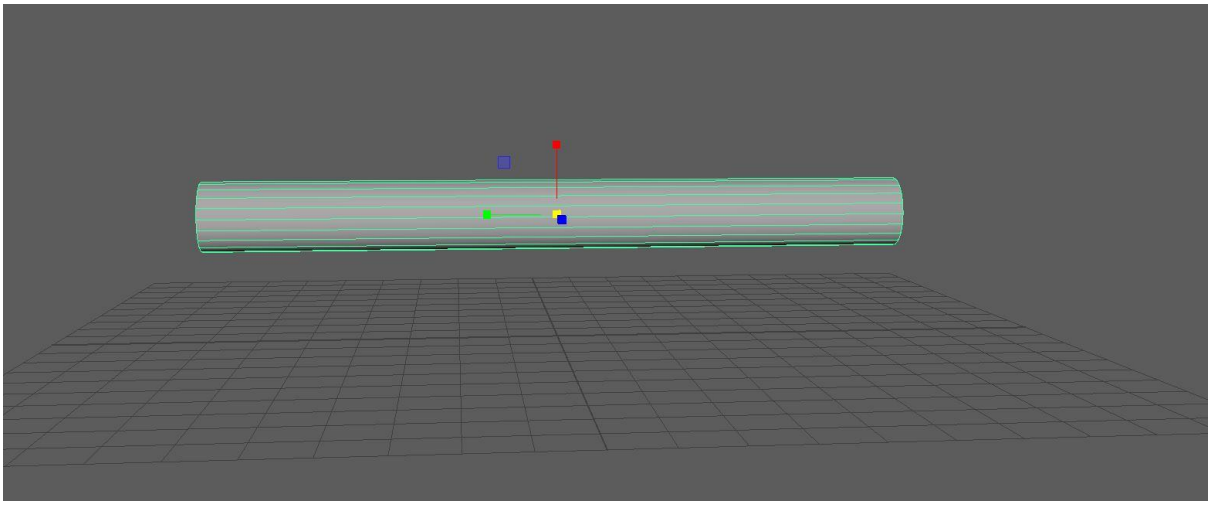
Here is the character sheet I created showing the personality traits of my dragon and its purpose if it was a real-life entity. I included what my dragon likes, dislikes and general personality traits. I decided on my dragon being honourable and valorous, disliking those who are spineless and inconsiderate. The purpose of my character would be for promotional material for a game, the target audience being from teenagers and above to any age who enjoy fantasy games, story-driven games and design-heavy games. Possibly, a front cover or maybe just an ideology for the theme of the game itself. I may stray slightly from my concept art depending on the time it takes me to 3D sculpt as I am not very confident using Maya ZBrush or substance painter.

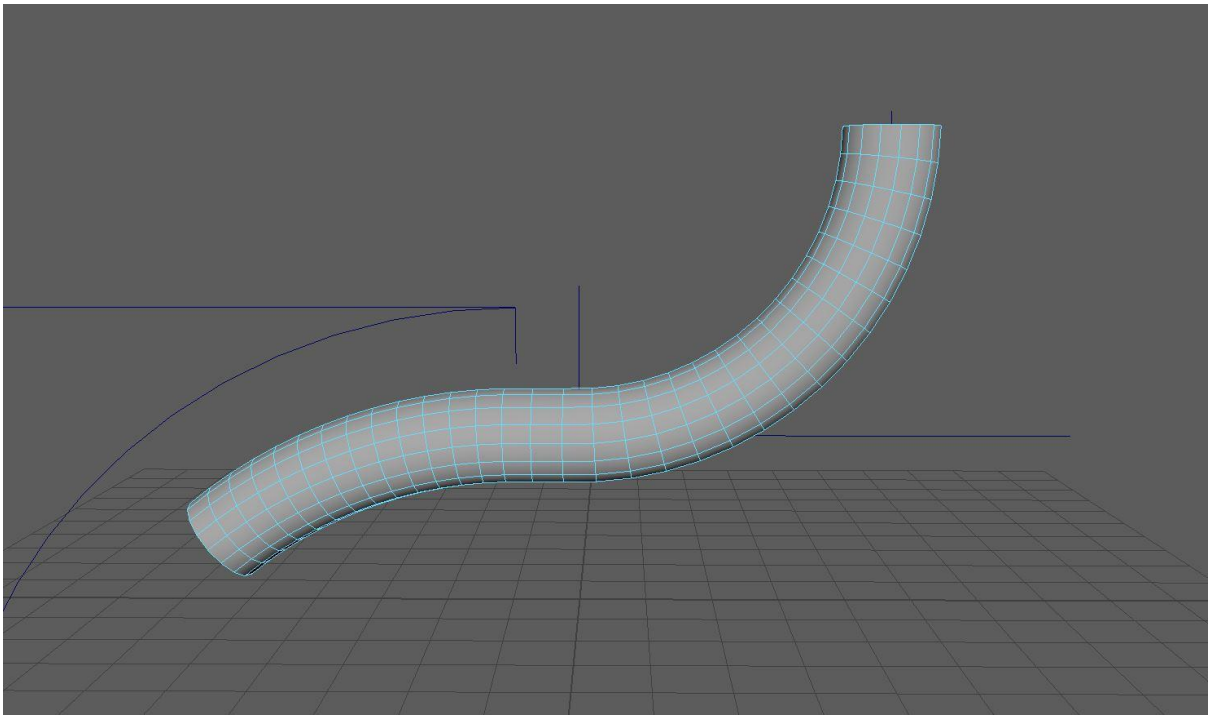
From my last brief, I created a 3D model elf which was poorly baked and textured. I relied on the quad drawing and smart materials however this time I intend to fully model everything myself from using a reference image, as well as not just rely on smart materials to texture my model. I also want to ensure my high to low poly bake has no errors whatsoever as this was something I severely struggled with last time, especially when creating the wings for my character. I think I will begin my model by creating the body and then possibly box modelling from there, starting at the legs and the head, however, I may decide to just do each section separately and combine them all at the end before putting them into ZBrush. I also intend to be

more efficient at UVing, as I was not bad at UVing last time, however, I want to make them more professional this time around and be a lot quicker. I will still use the 3D cut and sew tool to create my UVs as I believe this is the quickest method I have used so far.

Development

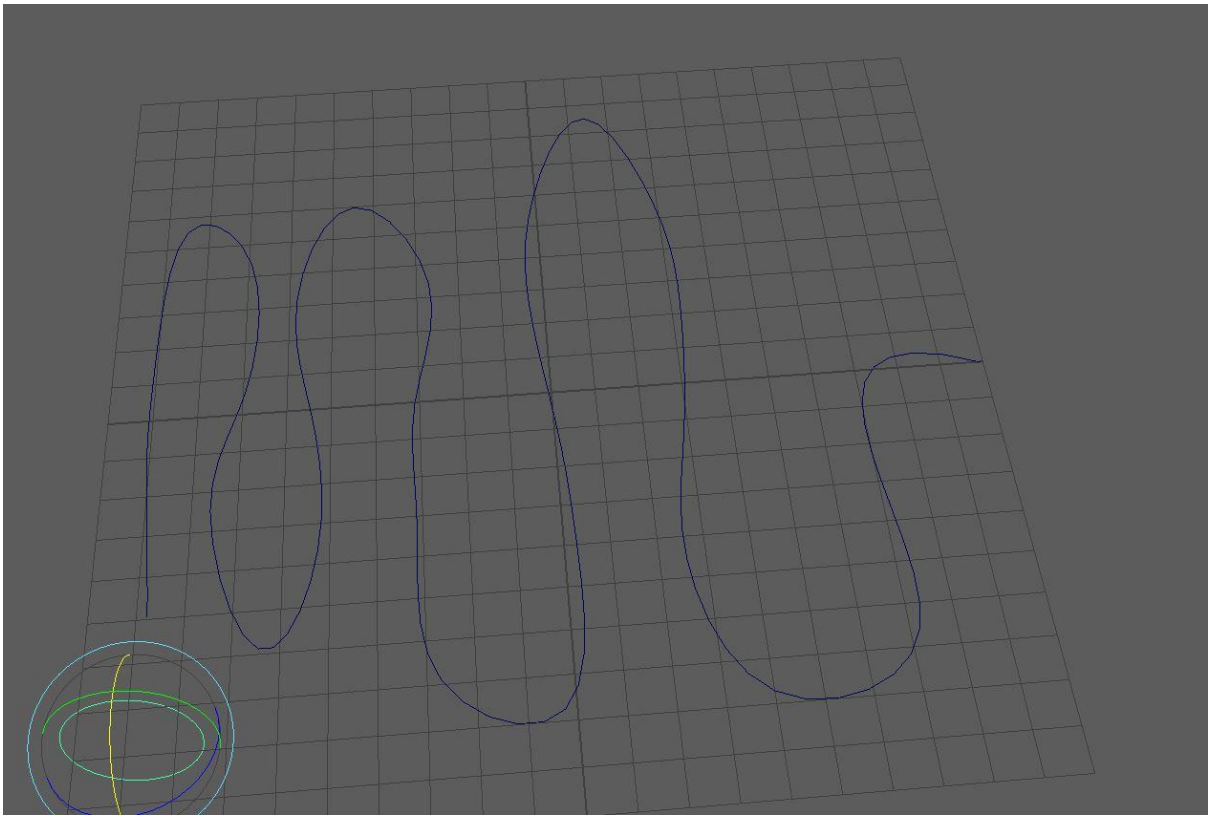
Firstly I needed to create the shape of the body. I was told to use a cylindrical shape, and then to apply the bend tool to slowly create the bend of the dragon's body.

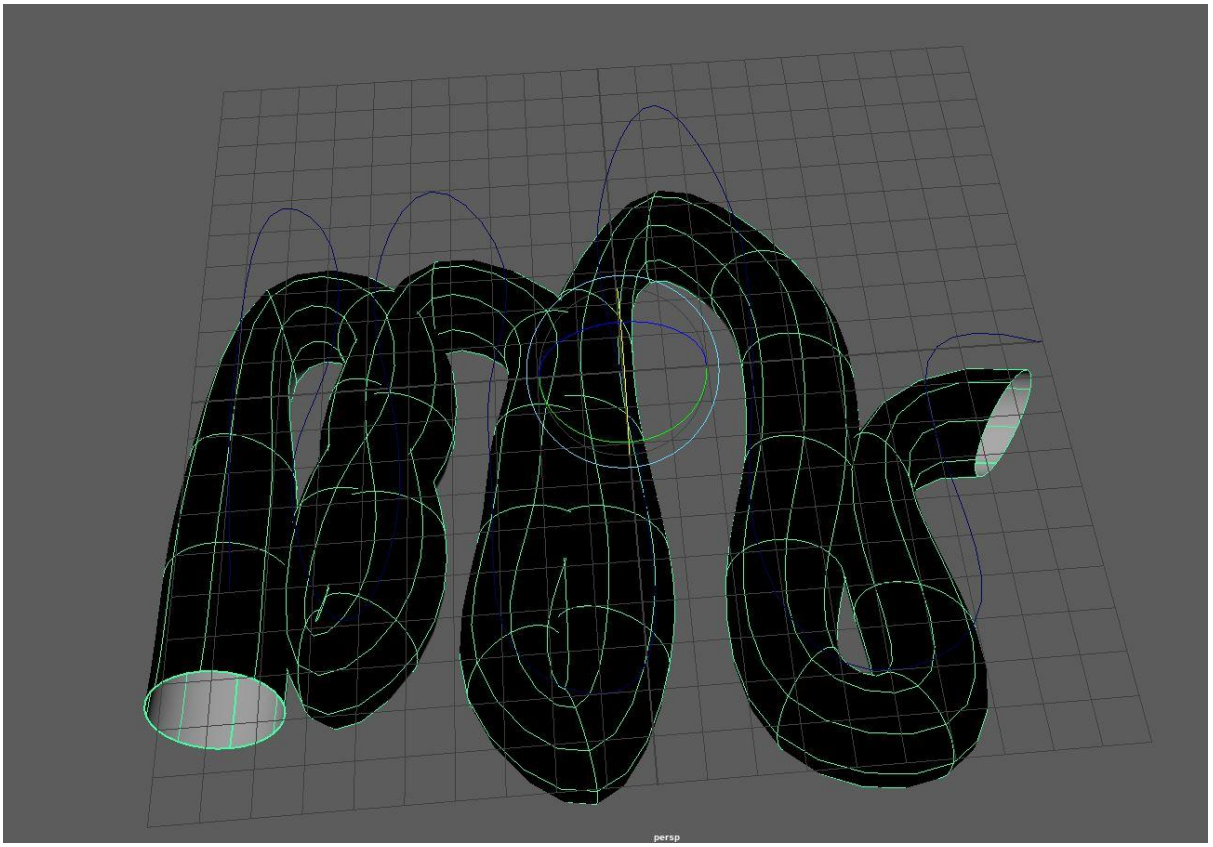




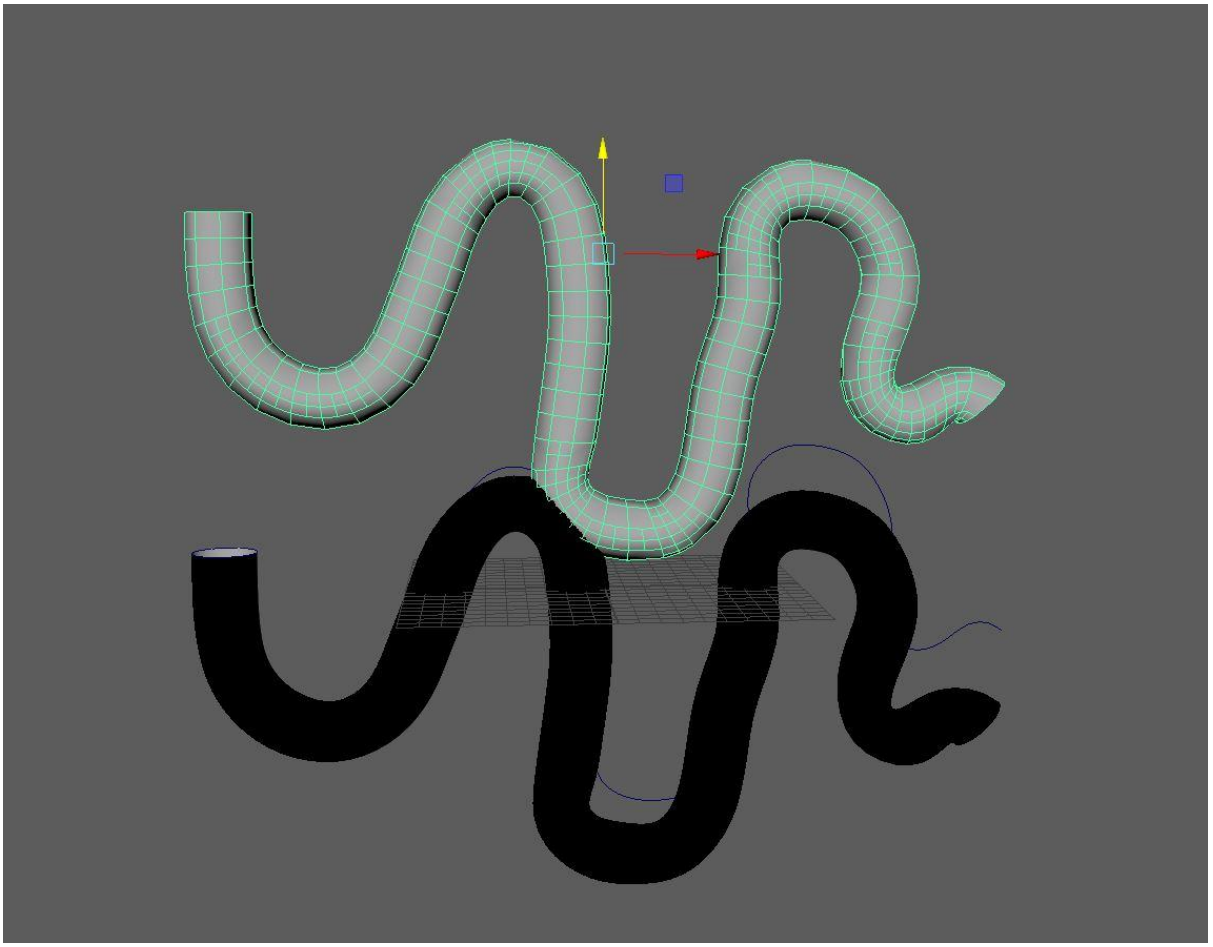
This is how my cylinder looked after one bend applied. I was finding the splines hard to understand, so I decided to look into a quicker method of bending the object, as I feel as though the method of the bend tool would take a while.

I looked at some videos to try and help me, and I found a really helpful video that educated me on NURBS HARVARD REF HERE. This allows me to simply draw a shape with a curve tool, much like in photoshop. From this, I could then add a circle nurb and extrude the line created.

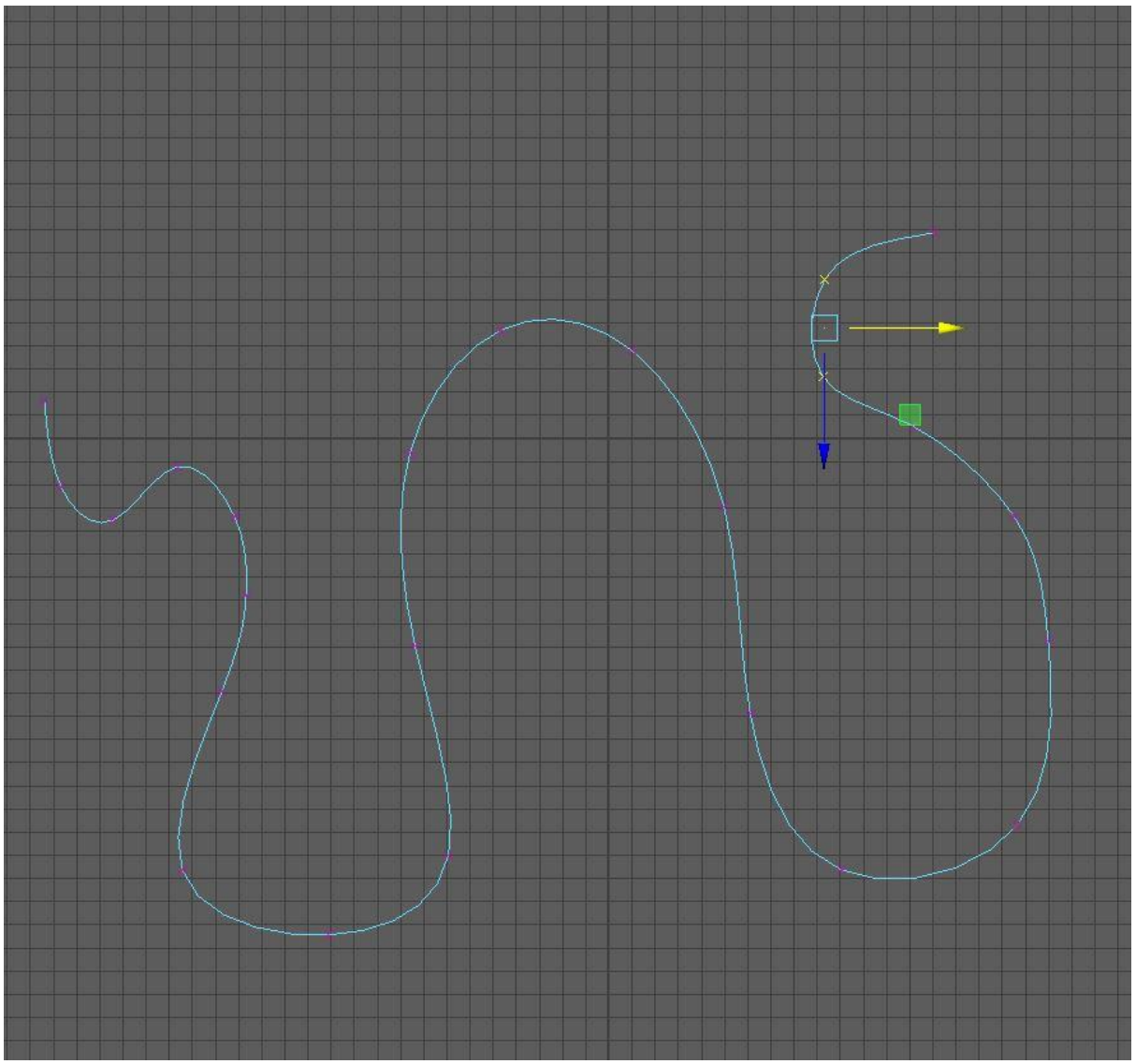




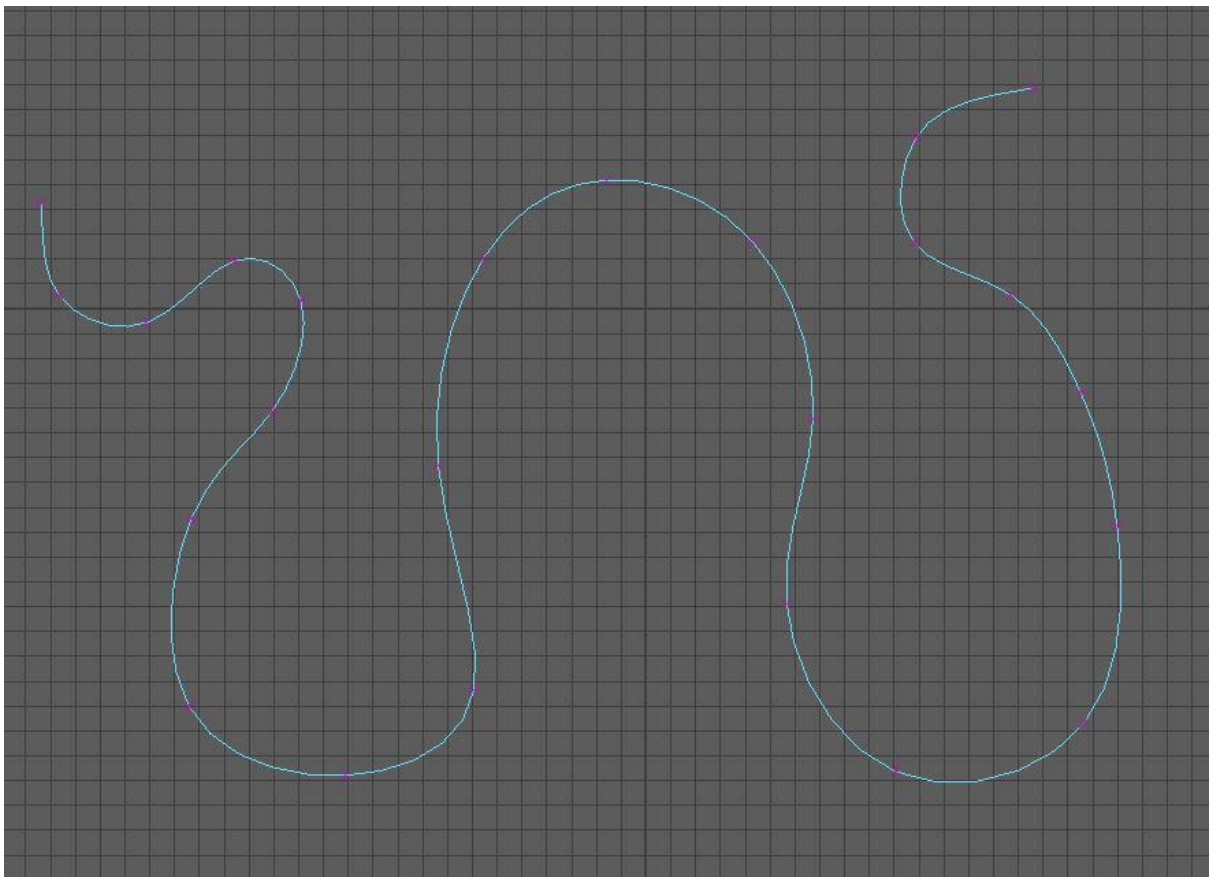
As shown, the first time I did this, the shape was inside out, overlapping and not at all a good shape to use. To try and rectify this, I changed the thickness of the tube and flipped it inside out before converting it into a mesh.



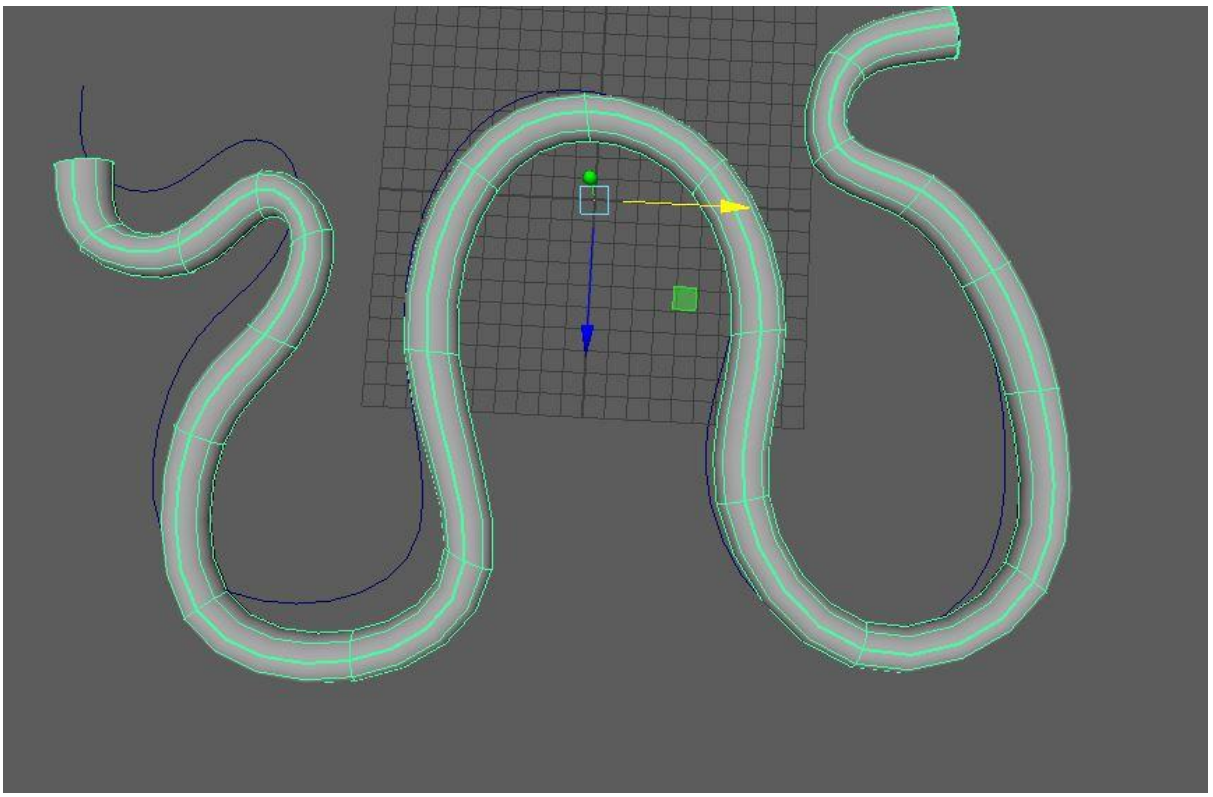
The topology looked a little broken, so I decided to completely redo the nurb now that I had had some practice. I redrew the shape and spent some time adjusting and replacing the points of curvature in the nurb, using a reference of a depiction of a Chinese dragon as a reference when creating the shape.



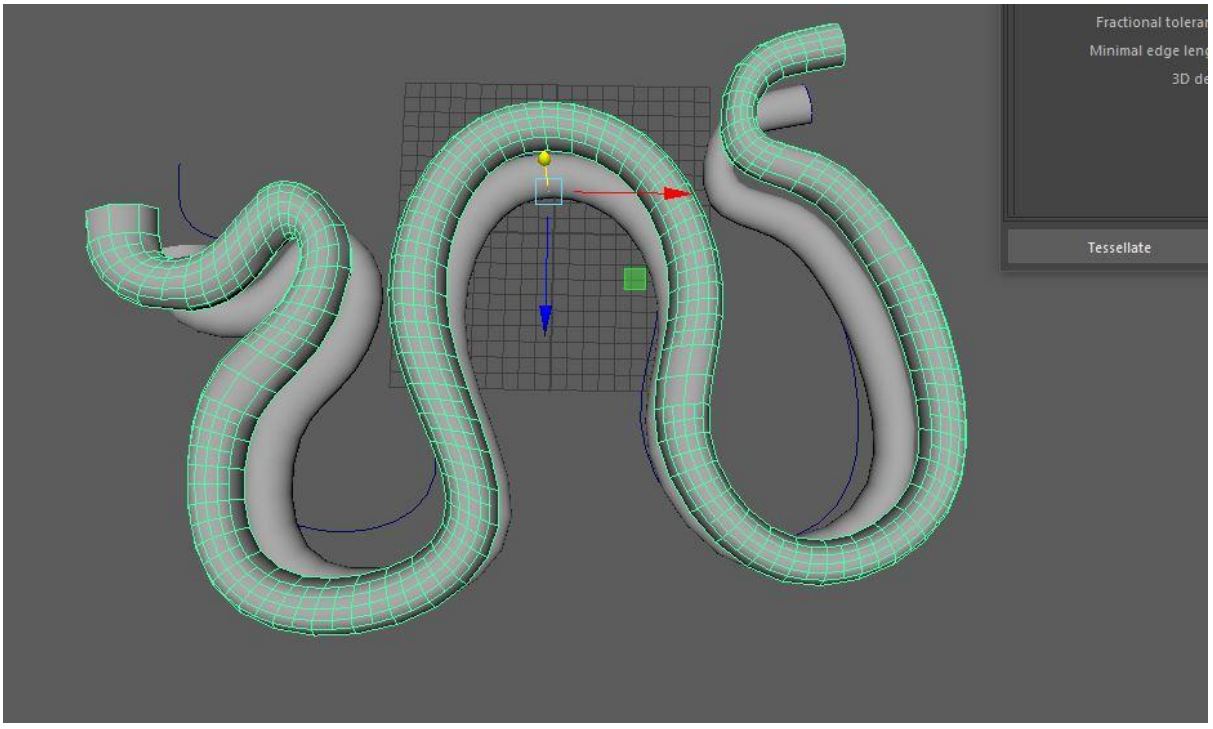
This is how the shape looked before adjusting the points, and re-bending the structure of the nurb.



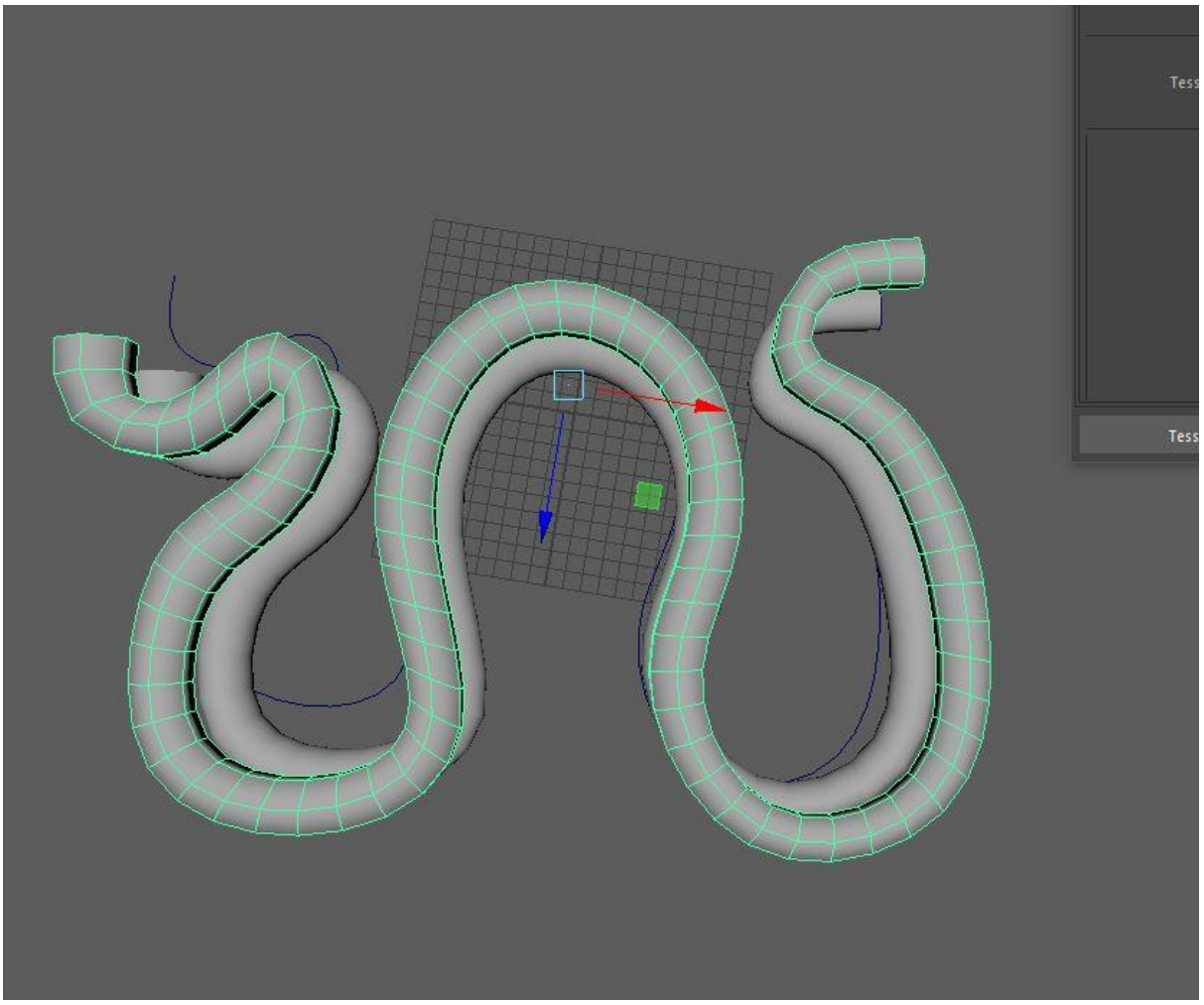
As you can see after spending time to line up the bottom of the curves so that they were in line with each other, and ensuring that the shape was reminiscent of that of the body of a Chinese Dragon, I decided to place the circular nurb and extrude it.



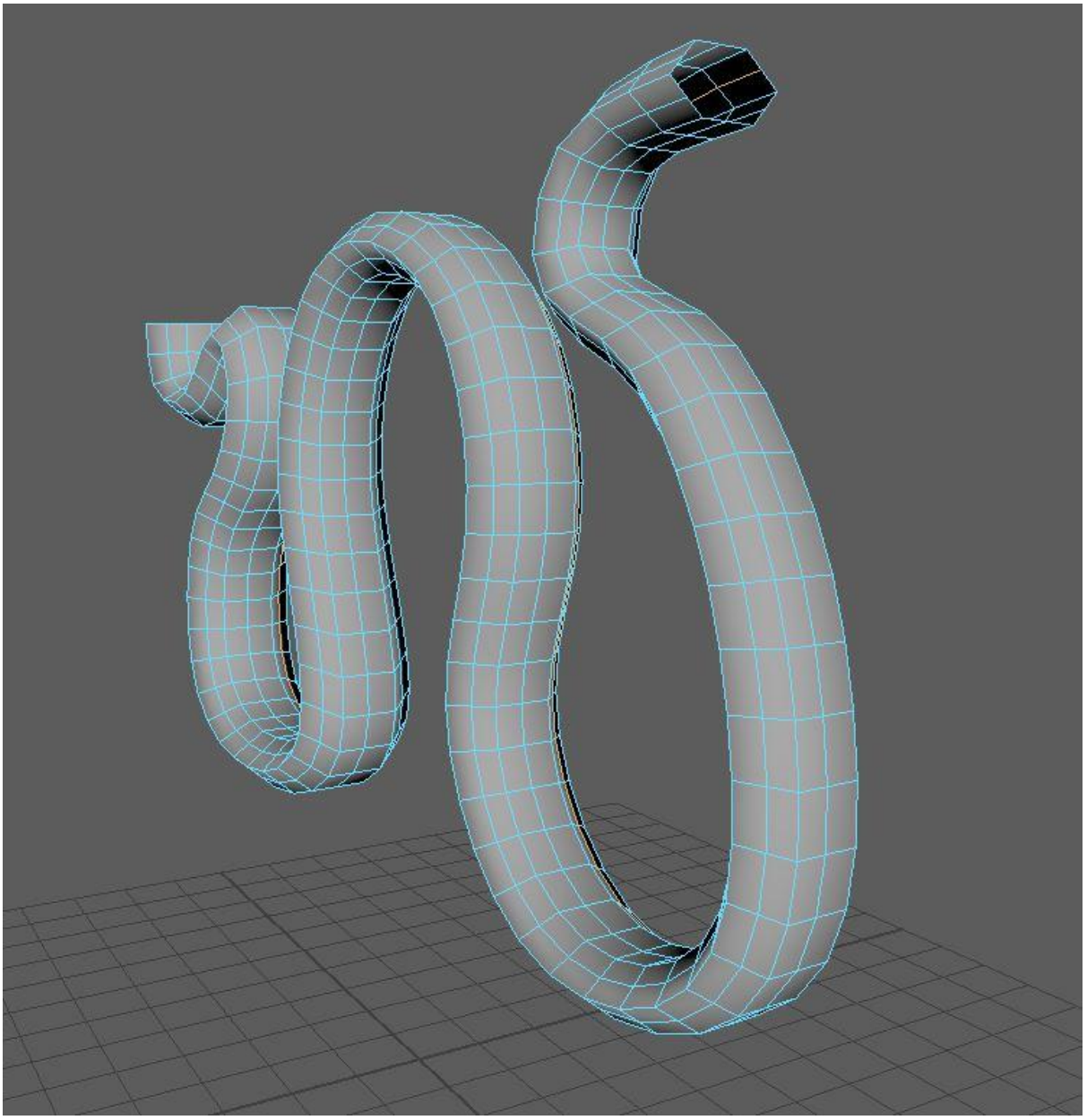
Luckily there was no overlap and the shape was no longer inside out as I placed the circular nurb correctly. I wanted to play with the settings of the nurb extrusion, however, I felt more comfortable at the time to instead convert this shape into a mesh, and then manually edit the edges and vertices using the symmetry tool.



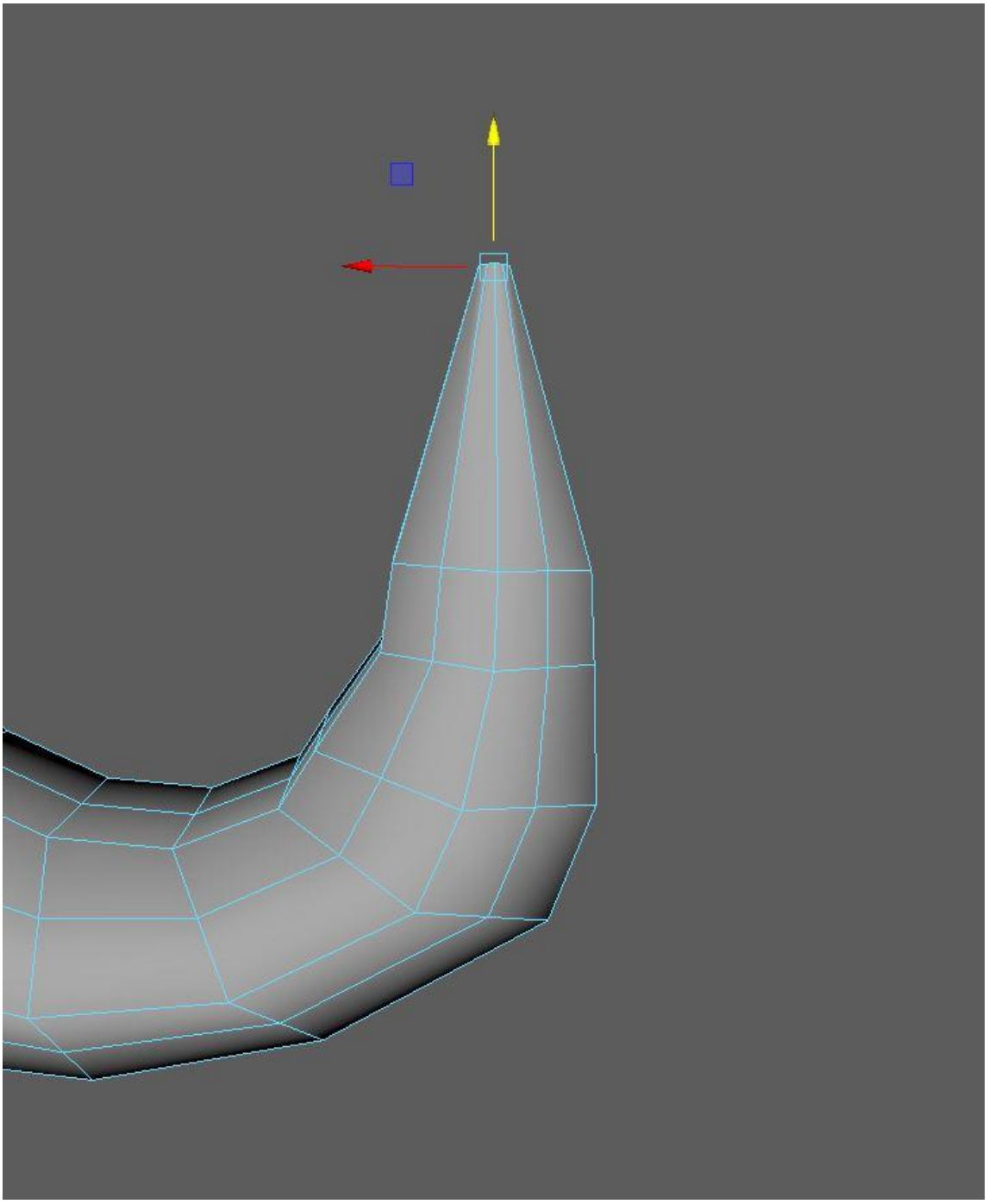
When I converted the nurb to a mesh, as you can see some parts of the topology looked messy. I played with some of the settings in the conversion tab, selecting different conversion options until the topology looked equal and correct.



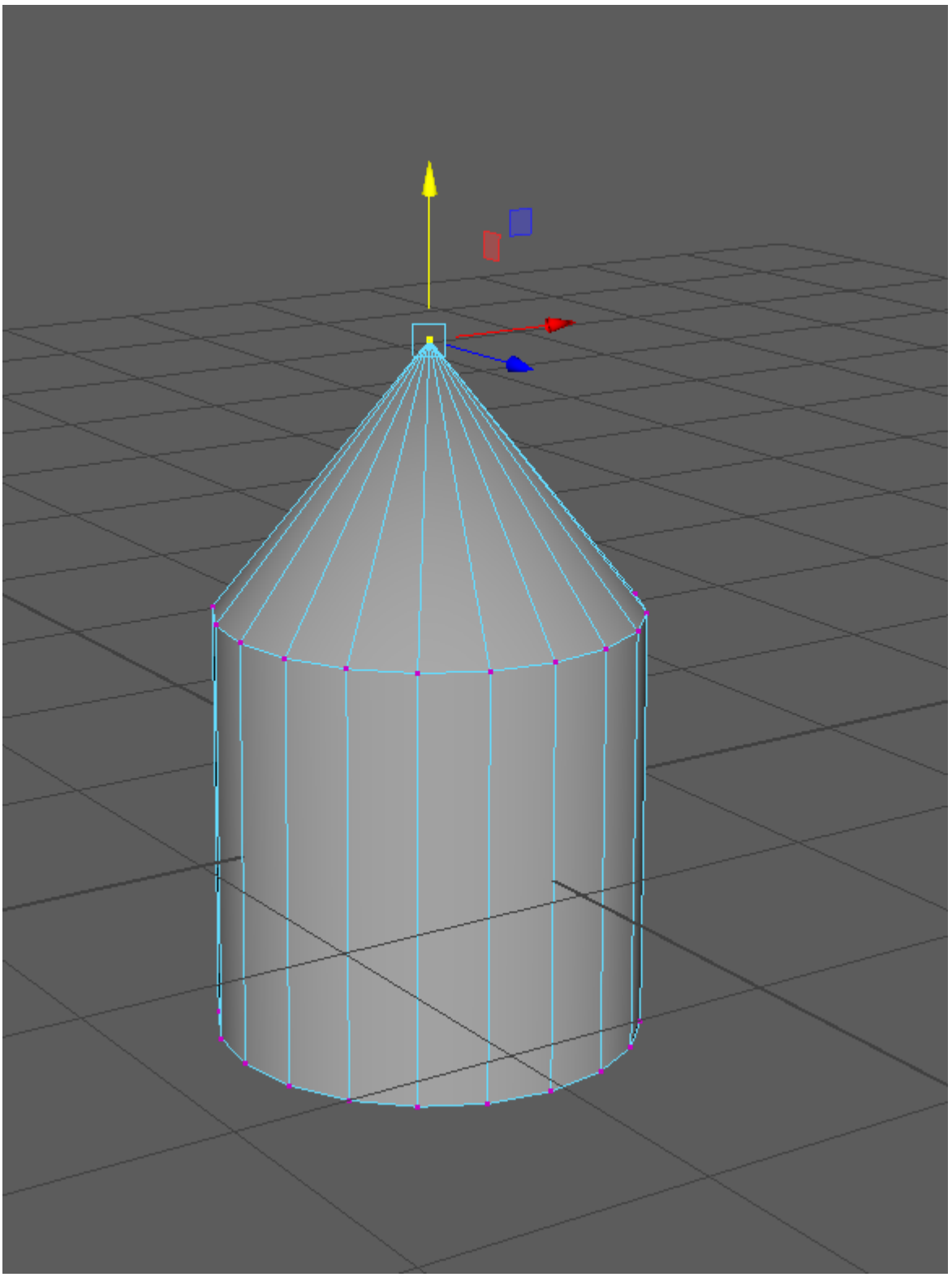
As I was really happy with this result, I began manually editing the mesh. I used the insert edge loop tool to create channels where I needed them so I could begin to pull and shrink the mesh where I needed it to. I first started by pulling all of the sides out to make the mesh wider so I had more of a surface to add details.



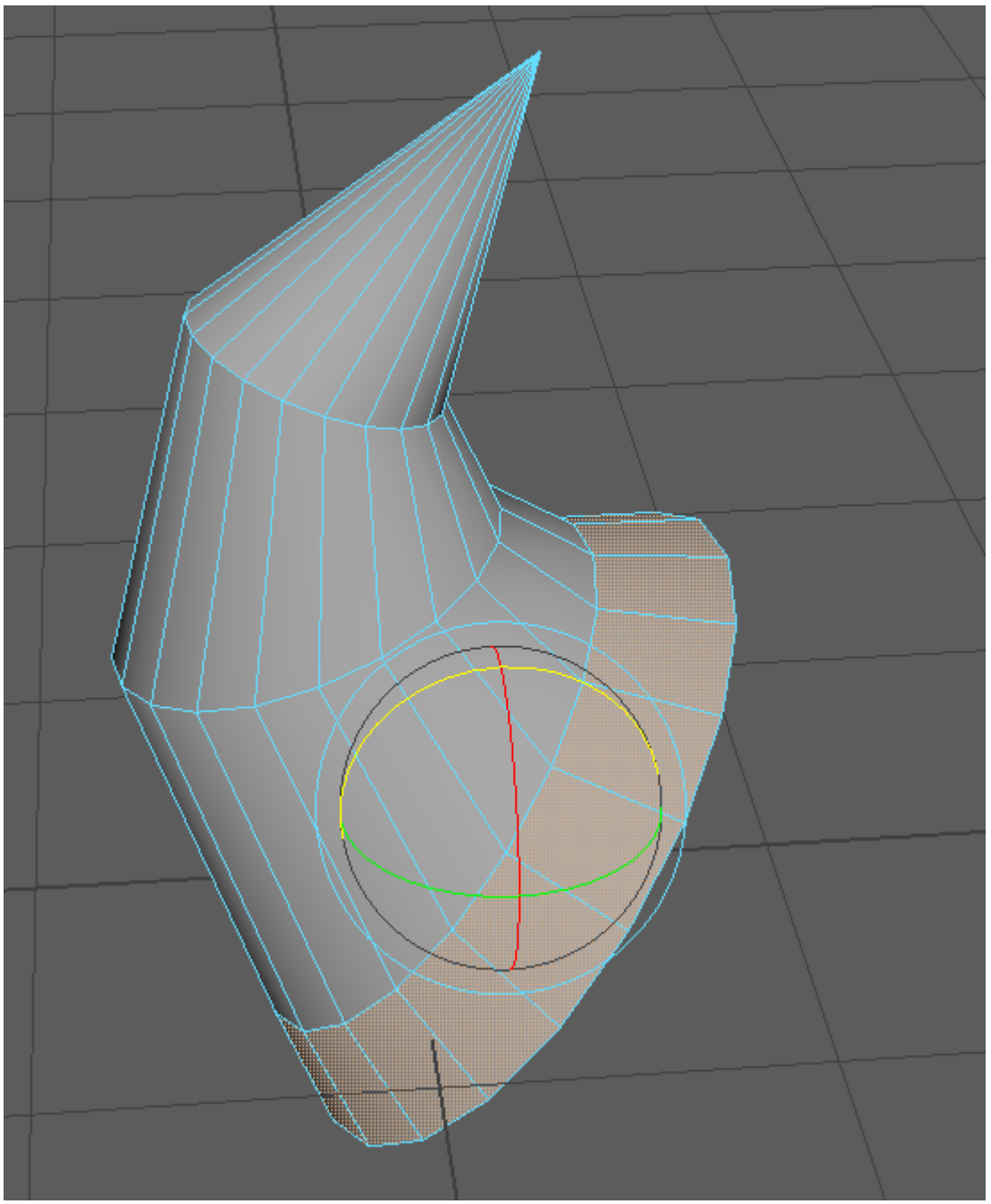
I also decided to fill in the hole on the tail, and pull the end of the vertices up to create a spike. This probably won't be visible when I create the tail but I'm not sure if having open holes on a mesh will cause problems when texturing or not.



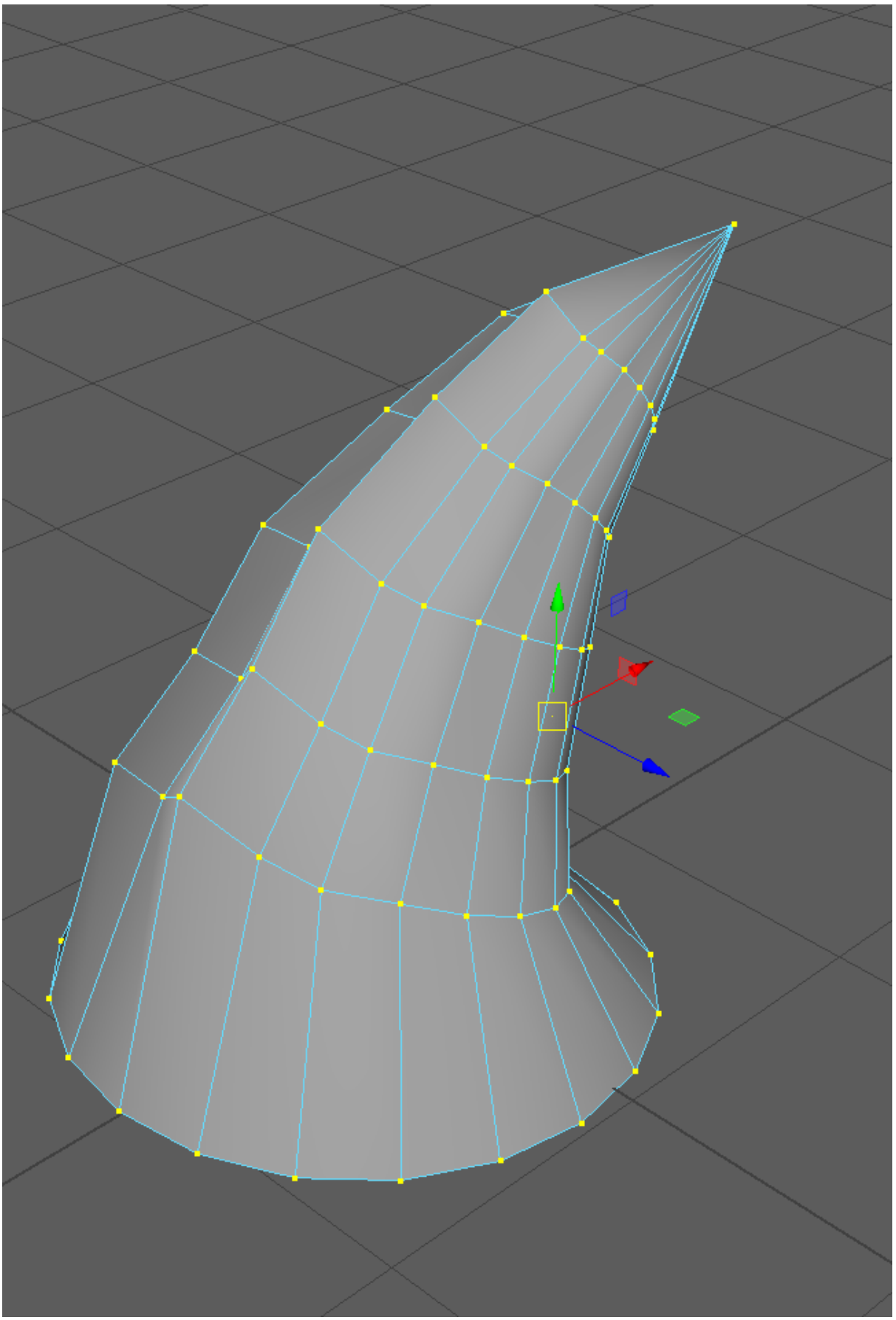
After feeling happy with the shape of the body, I decided to now create the spikes which would be on the back of my dragon. I decided I would create one, and then duplicate as many as needed, resizing and shaping as I went along. I began with a cylinder and pulled up the top to create a cone shape. I would have begun with a cone however when I tried to add edge loops to the cone it would only allow me to add edge loops vertically which was a problem. After adding the edge loops to the cylinder, I began to rotate and bend the faces on each layer of the cone to create a spike shape. When I was happy with this, I swapped from face select mode to vertex selected, and began pulling out some of the edges to create more depth and texture within the spike.



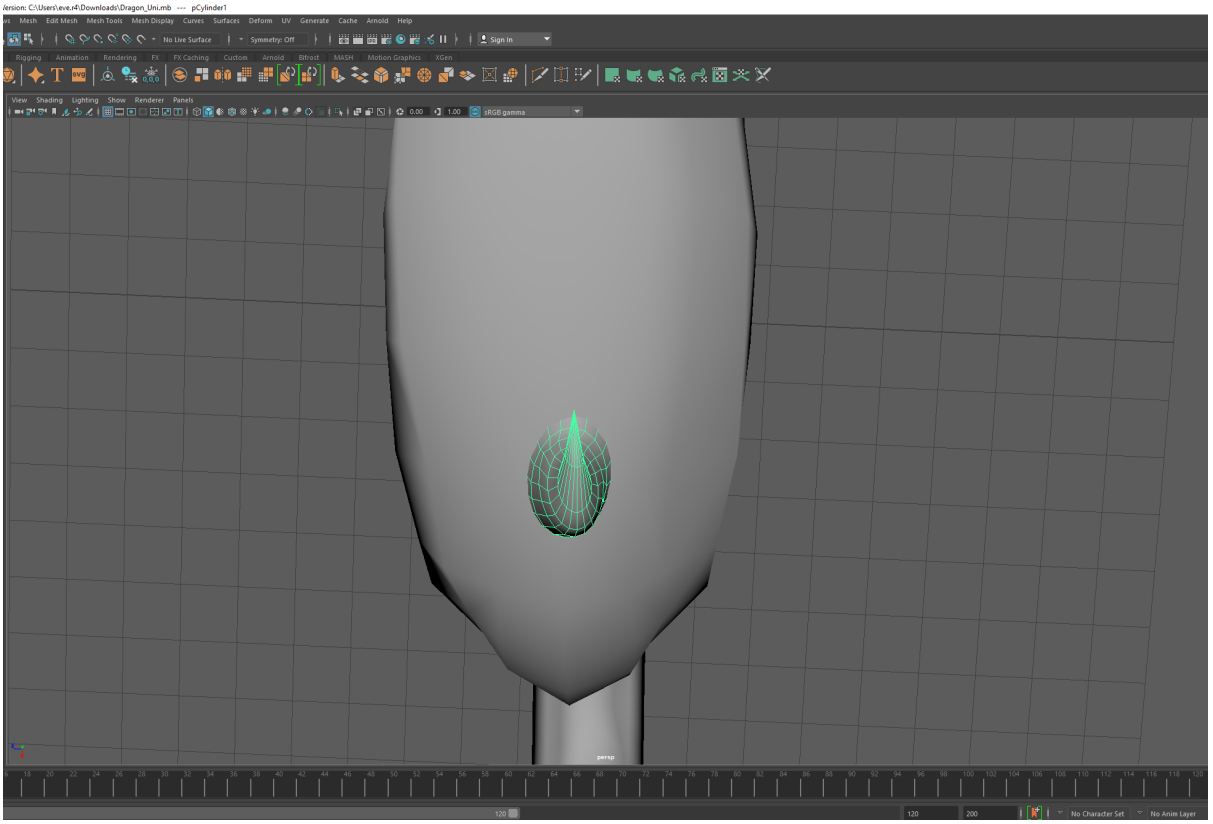
I pulled up the middle vertex of the cylinder's face.



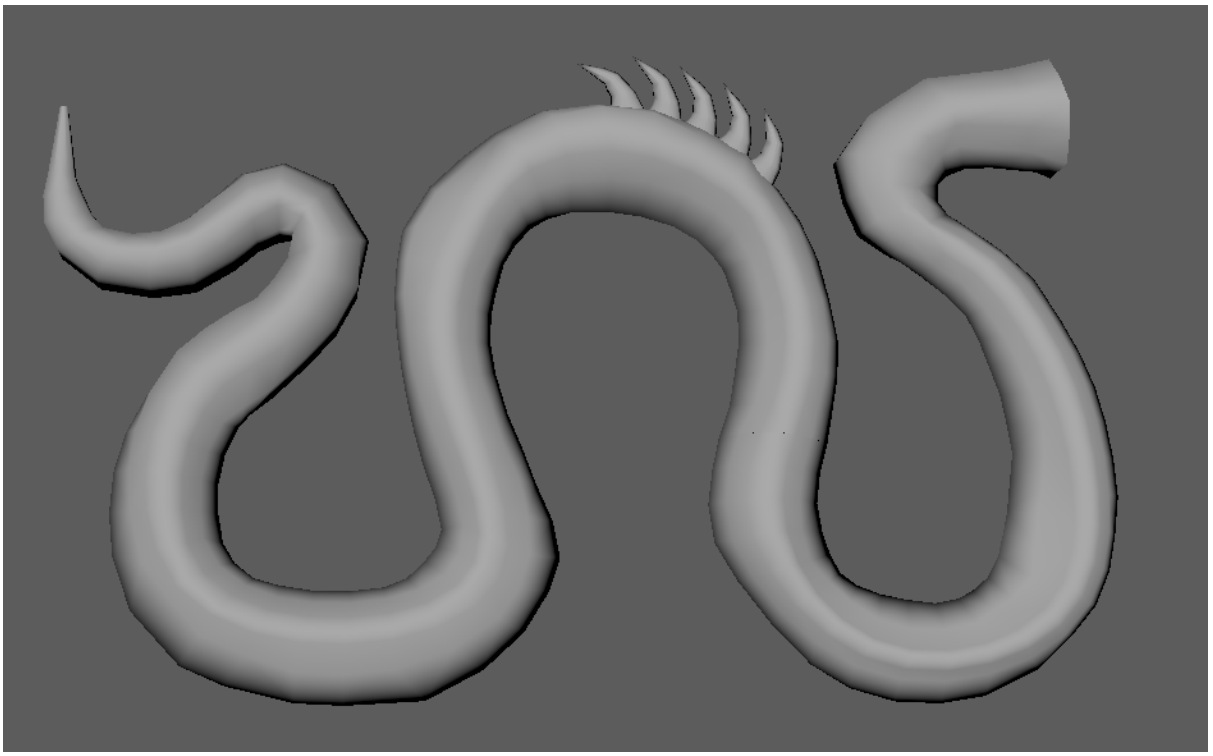
I then individually grabbed each row of faces and rotated them.

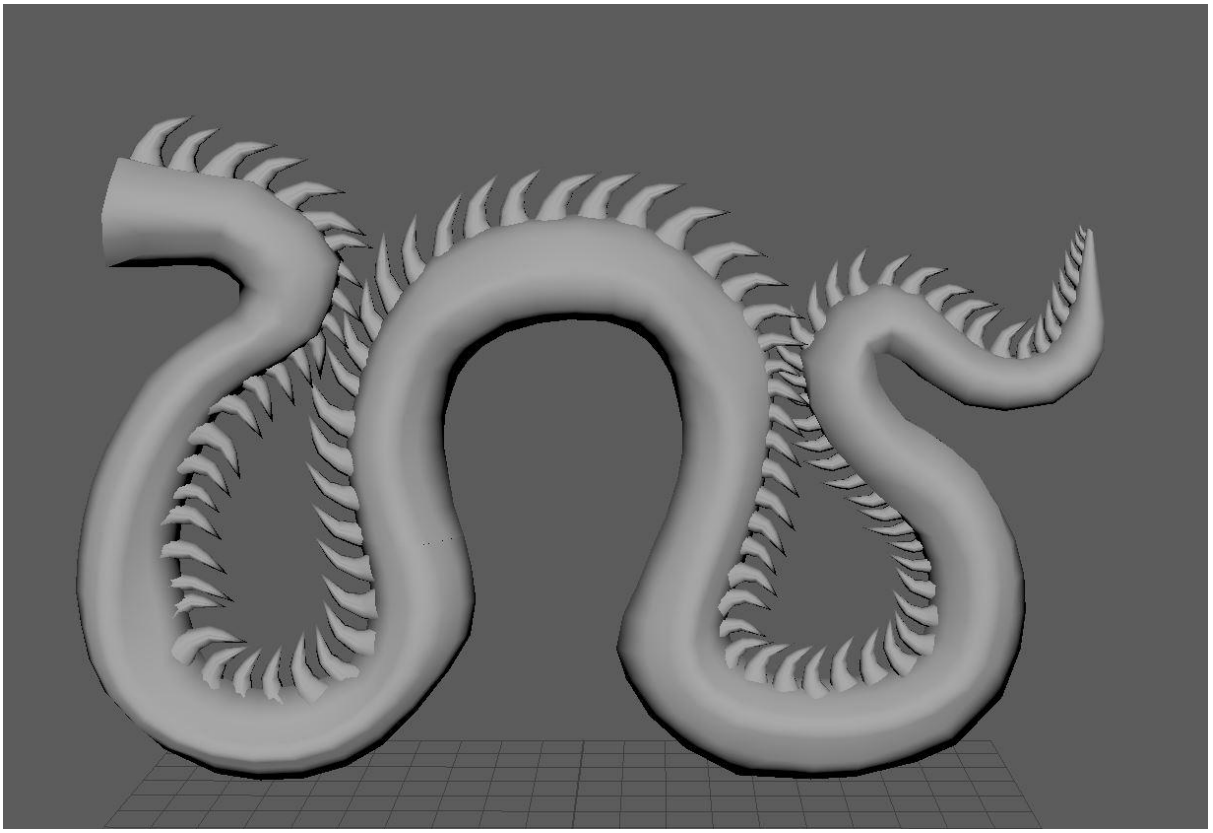


I then grabbed rows of vertices and pulled out edges to create depth.



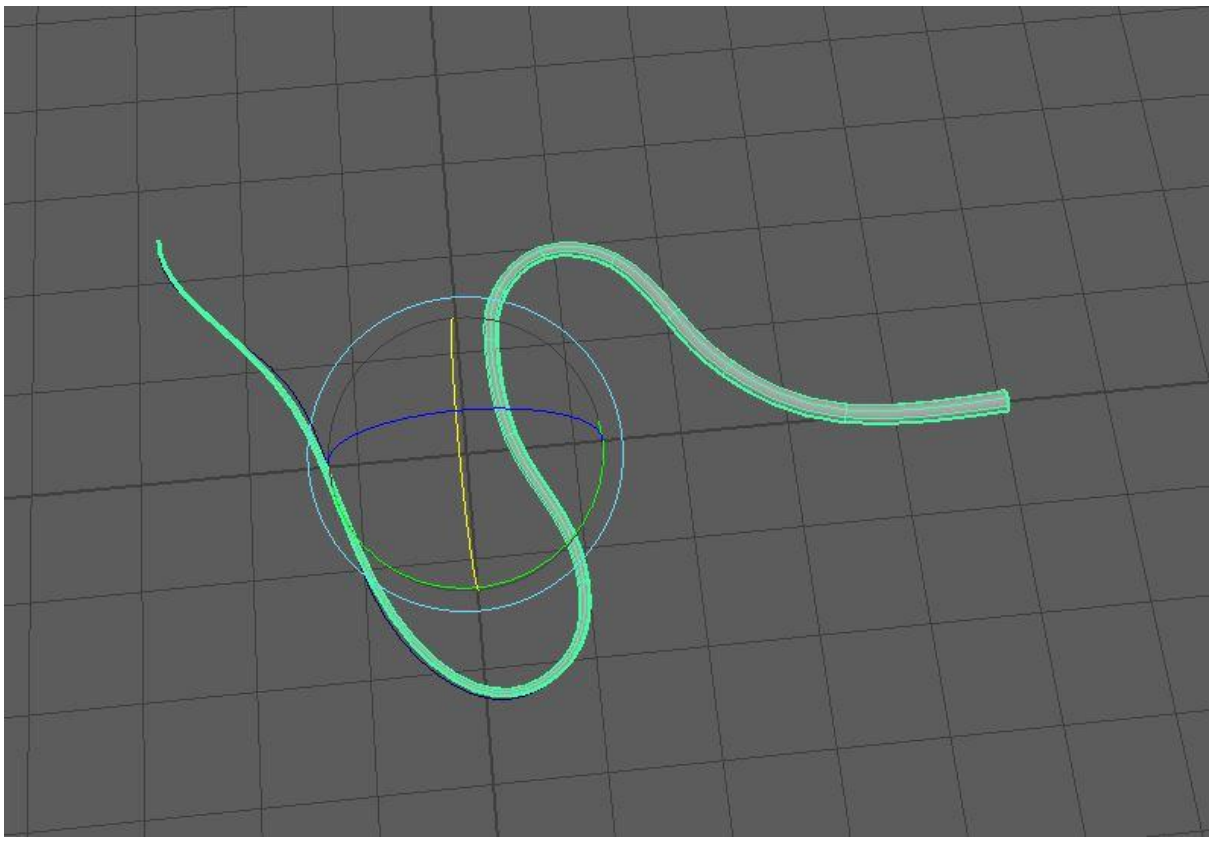
After placing the first spike on the body of the dragon, I played around with the rotation and scale of the spike. After I was happy with the placement, I used Ctrl+D to duplicate each spike, changing the rotation ever so slightly as each spike was placed.

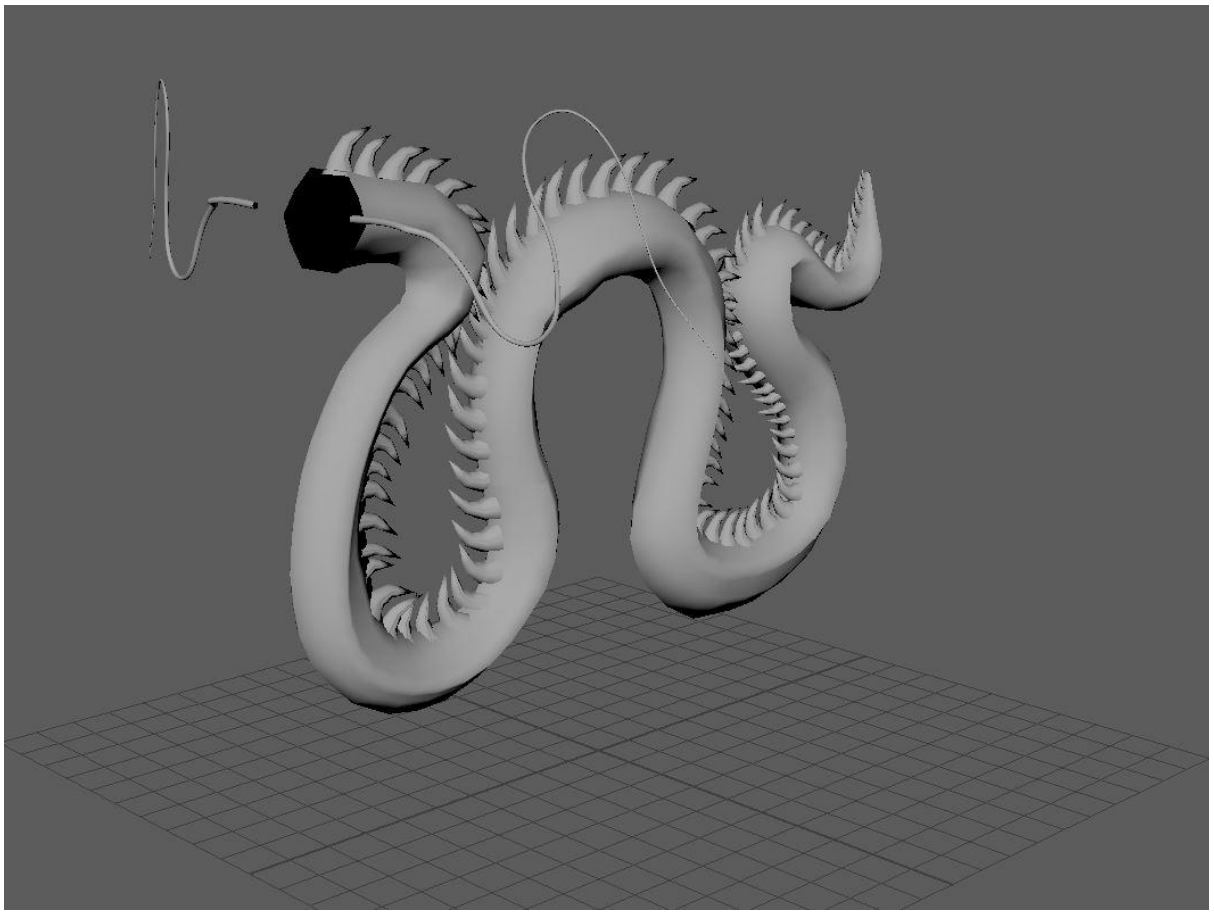




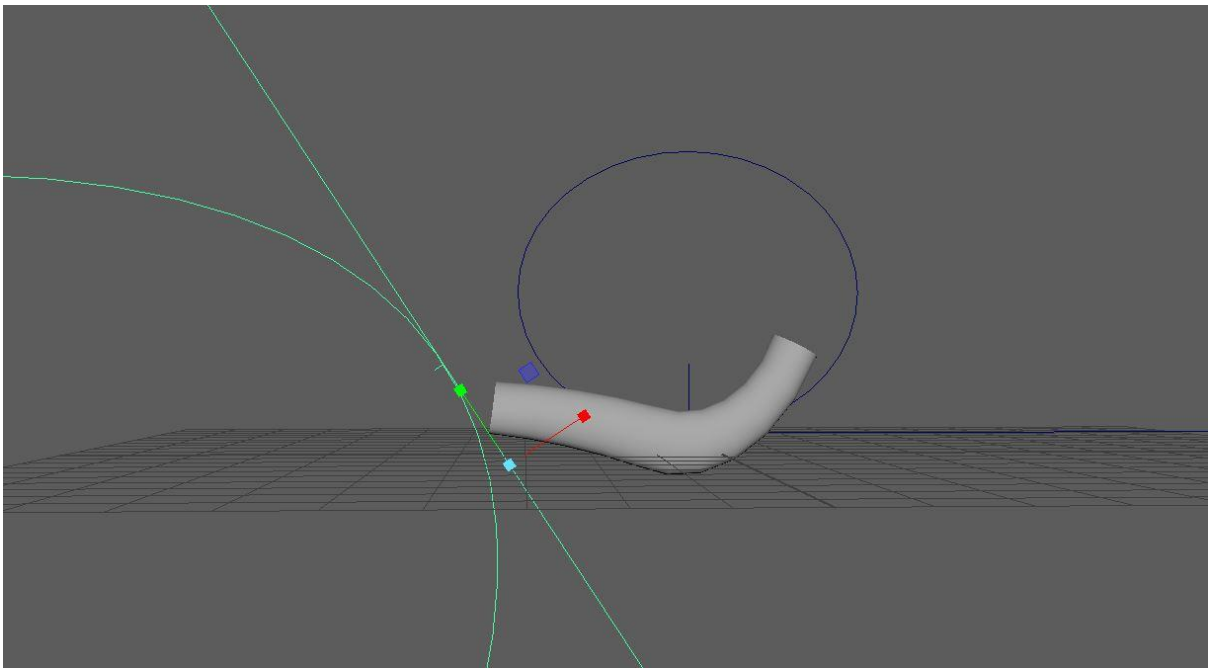
After being somewhat satisfied with the spikes, I decided for now I would move on and create some more features for the dragon. I placed each different mesh into separate layers so that the body and spikes could be hidden separately as I sculpted more objects.

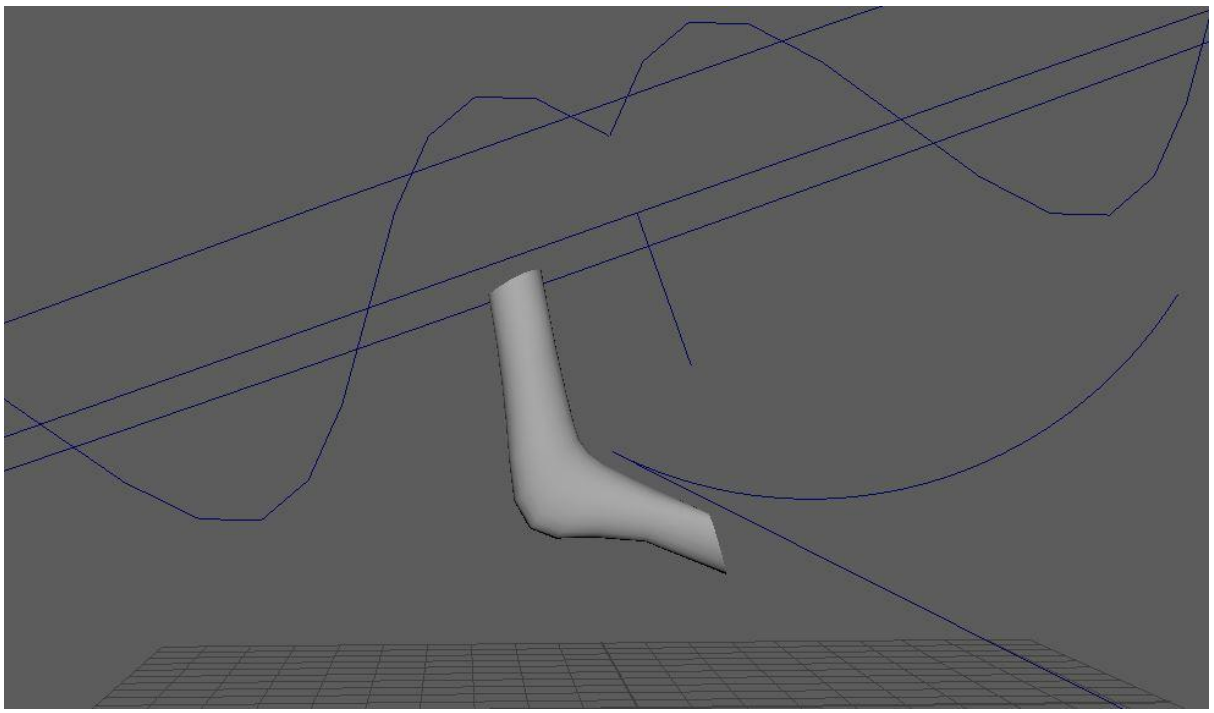
I decided I would next create the whiskers for my dragon, I decided I would use the same technique with the nurbs that I used to create the body shape, however this time I would use the taper feature in the nurb option to create a thinner end of the tube to make it look more like a whisker.

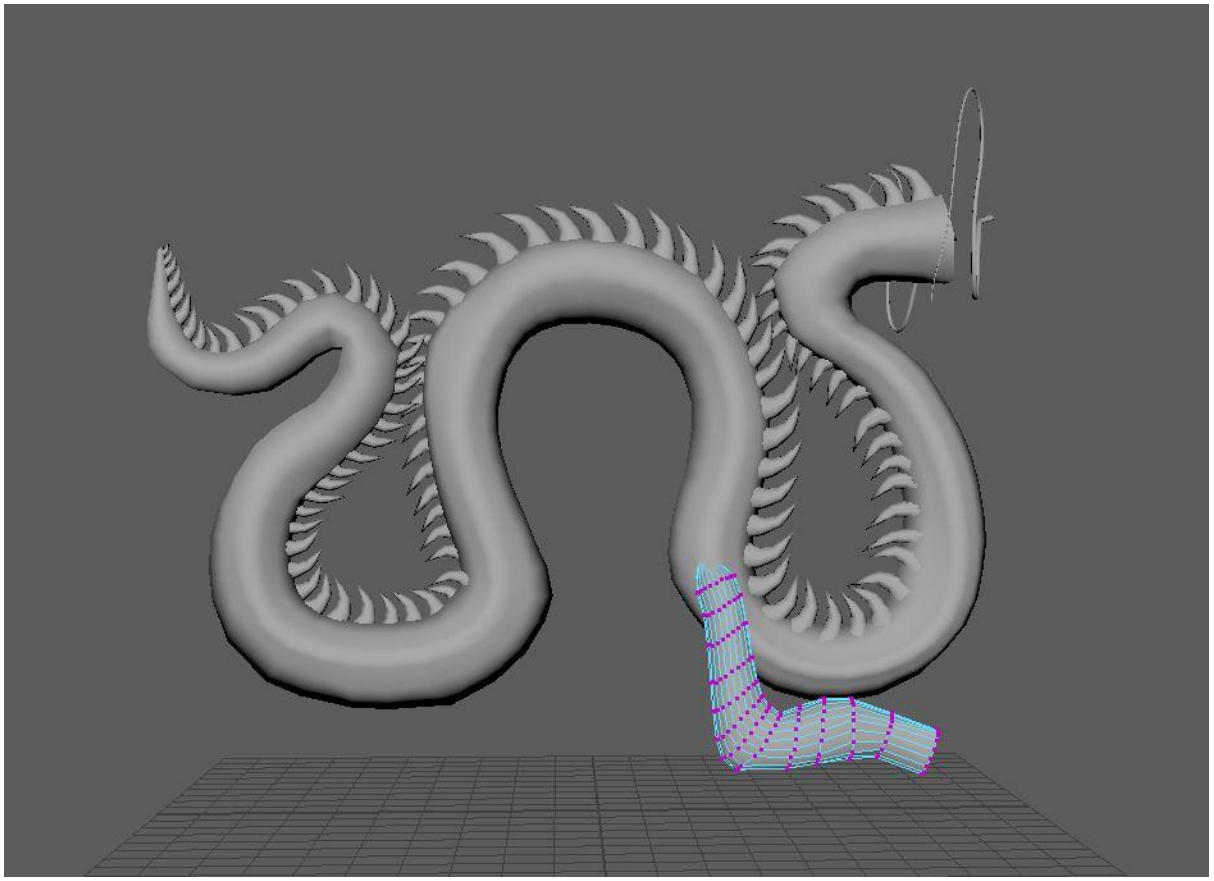


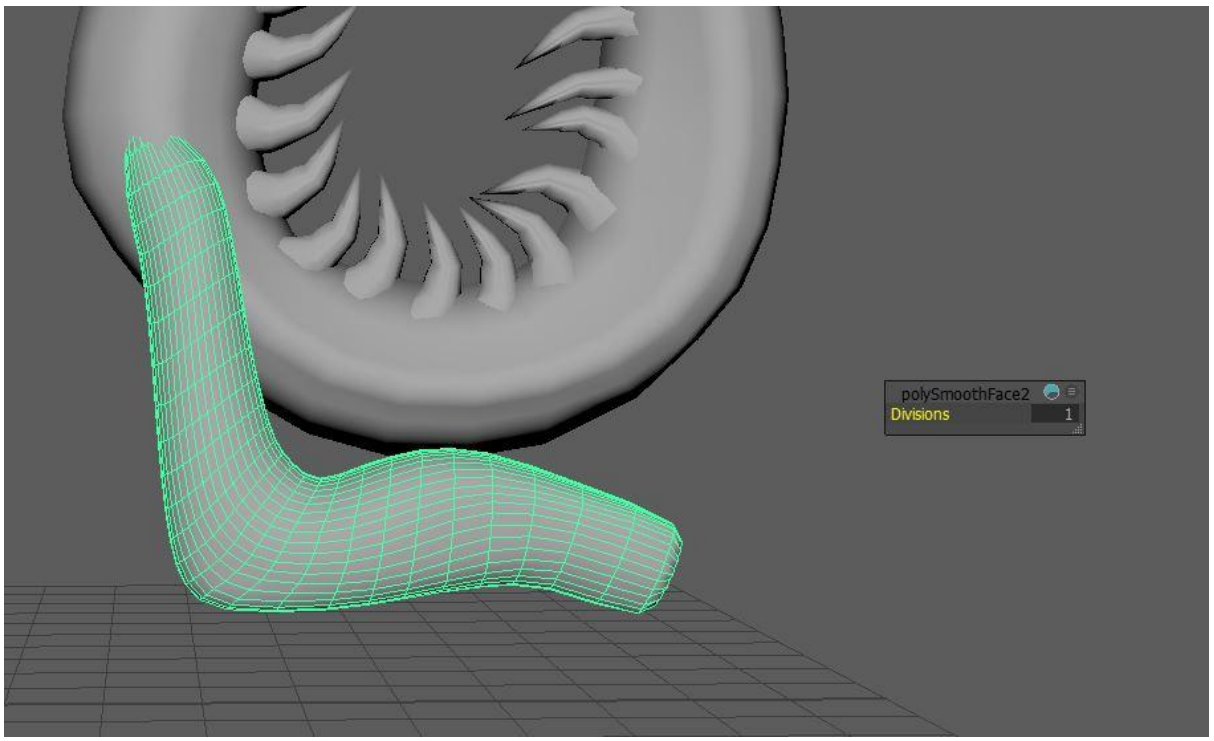


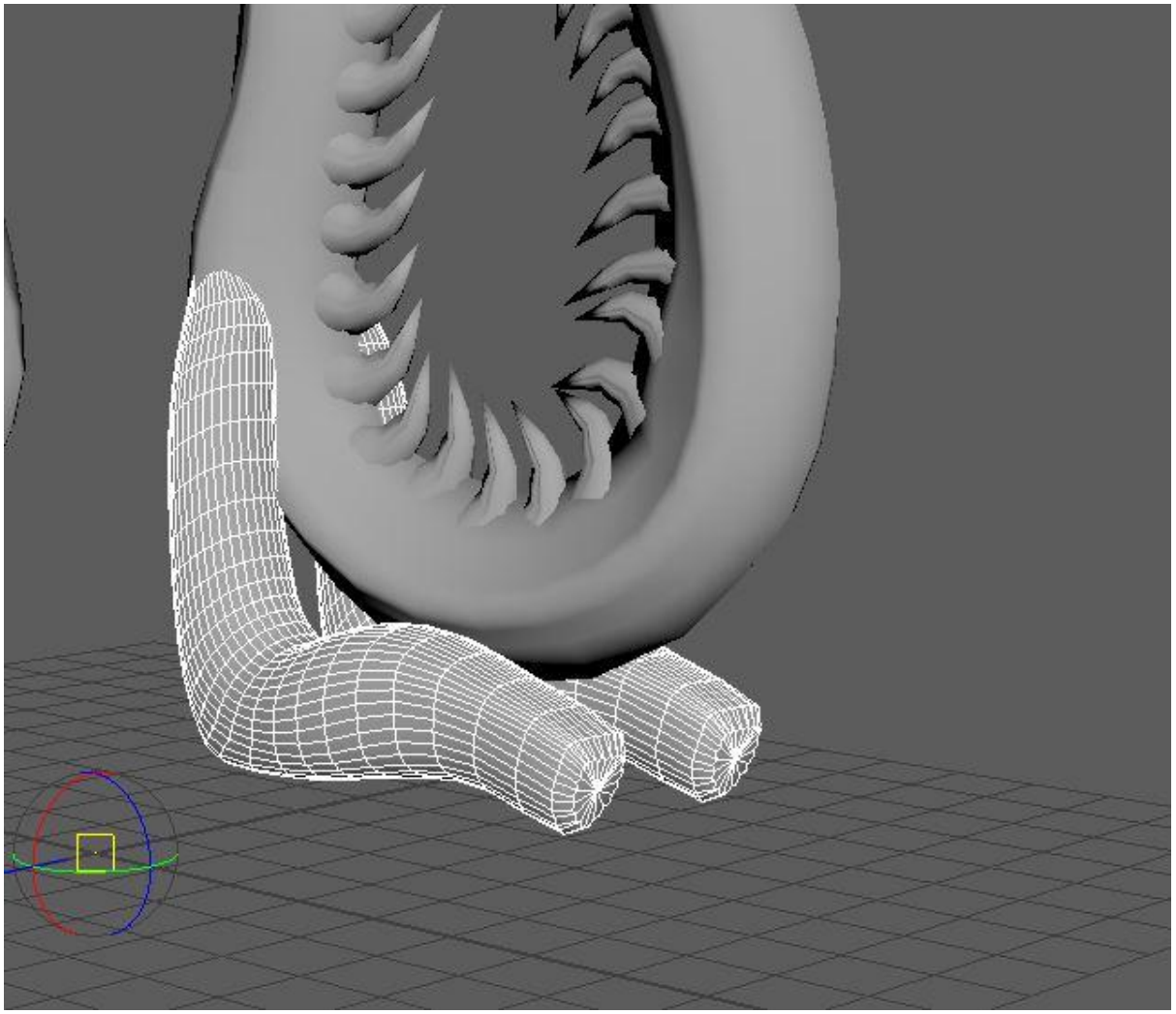
I duplicated the whiskers and used the rotation tool with only some of the faces selected to bend the whiskers back so that they were not flat against the axis. After these whiskers were finished I decided to create the legs. I was quite nervous when creating the legs as I have never sculpted anything like this previously. I began with a cylinder again, and this time decided to play with the different mesh tools such as the bend tool, and the wave tool to try and create the shape of an animal leg. I was quite lucky with the tools as I managed to create a really good shape for the leg without fully knowing what I was doing. When I was fully happy with the shape of the leg, I applied the mesh smooth tool to make the shape look more organic before I flipped a duplicate of the leg to create the other front leg and the two at the back.



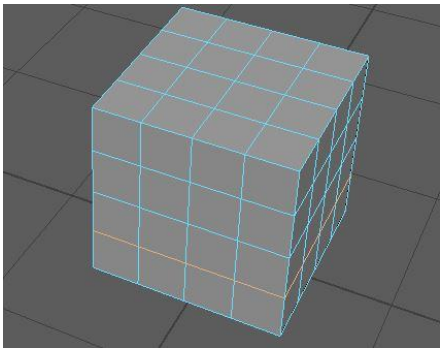
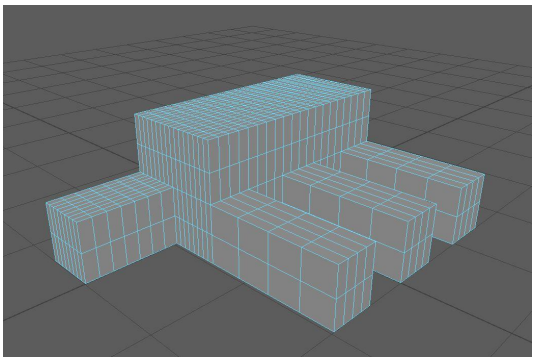
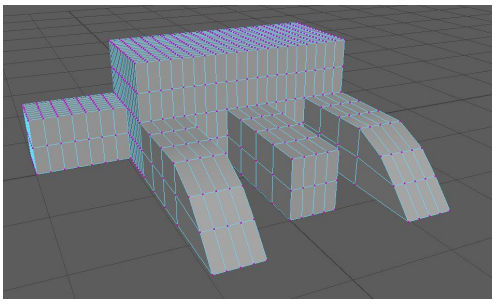
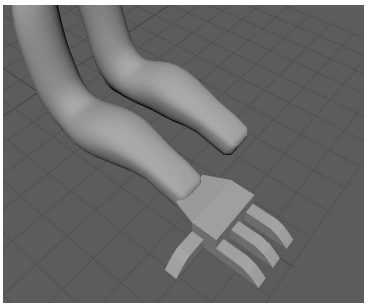
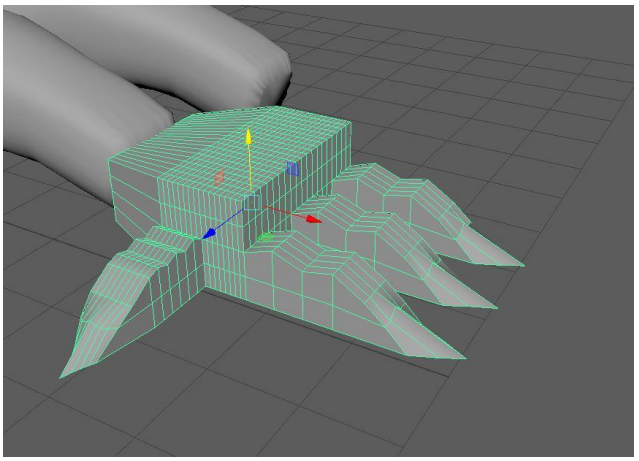


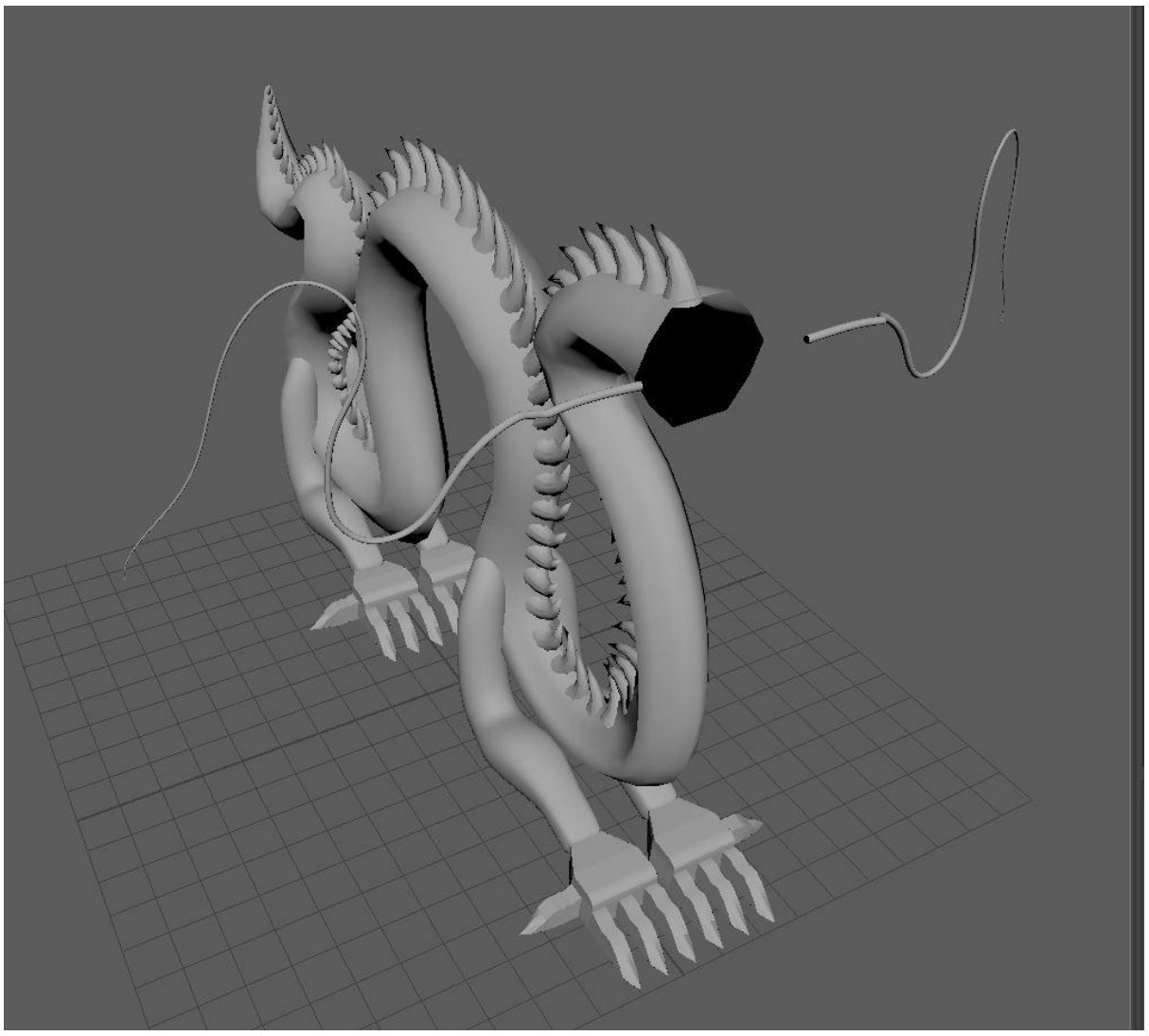



polySmoothFace2
Divisions
1

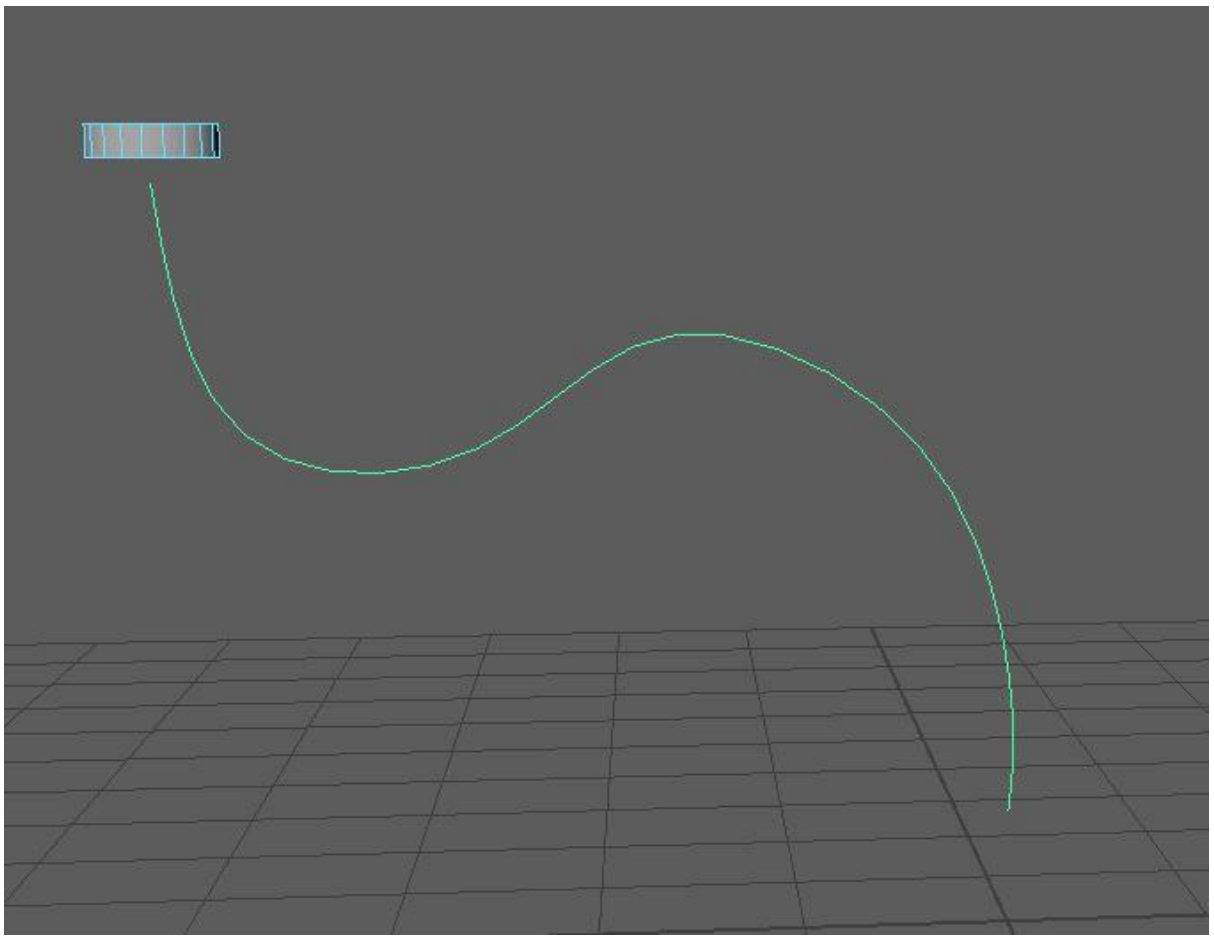


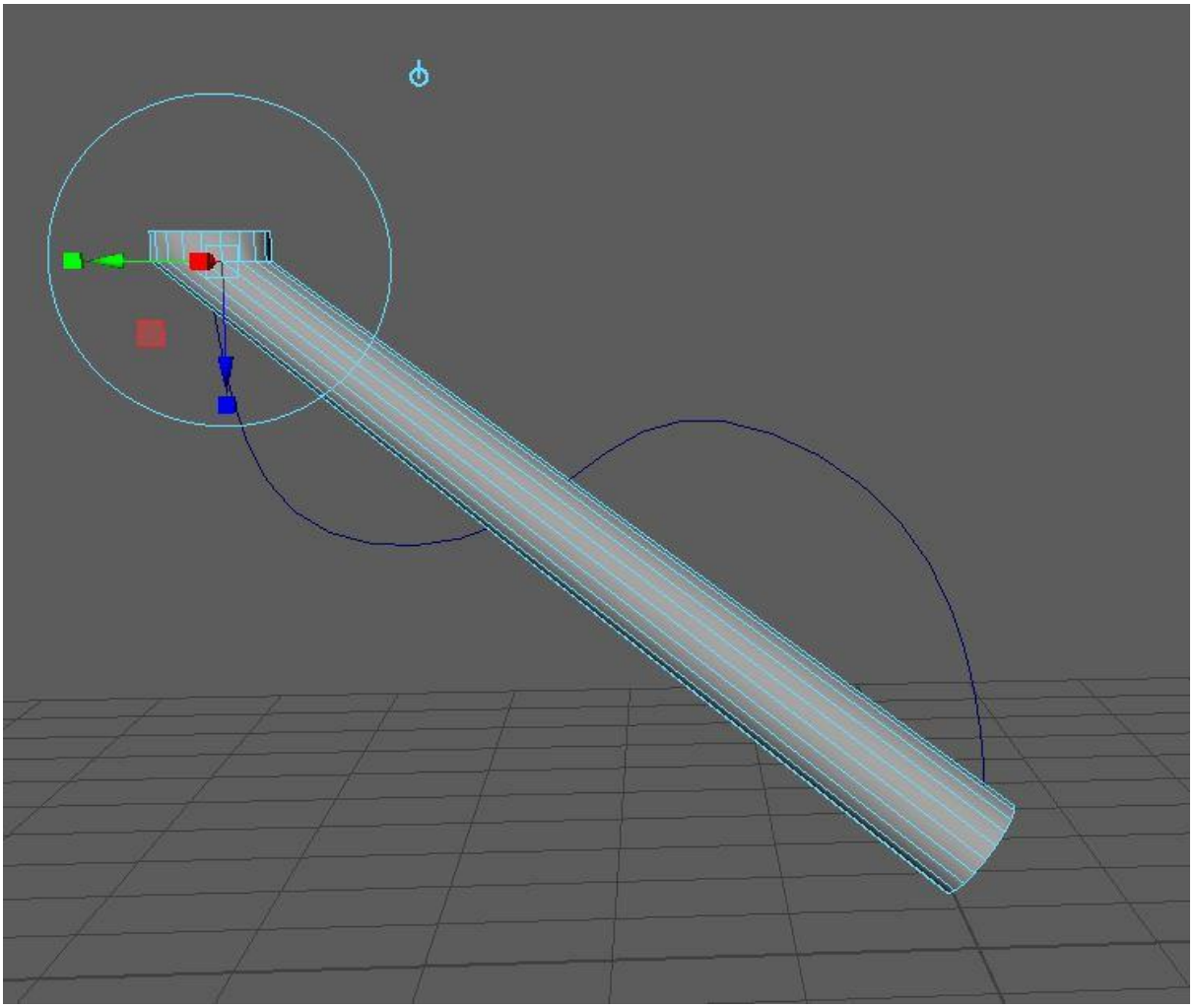
After creating the legs and feeling satisfied with the outco,me, it was now time to create the tiger paws. I decided to use the box modelling technique as it's a technique I have only tried to use once before. I began with a cube and added some edge loops so that each face had 16 squares, which would give me enough space to work out what I wanted to create. I then extended the cube to create a cuboid shape, with many more edge loops. I began to extrude three fingers and a dew claw. I used the side view to pull out the talon shape at the end of the finger tips creating somewhat of a claw shape. I then duplicated the paw three times and lined them up with the legs.

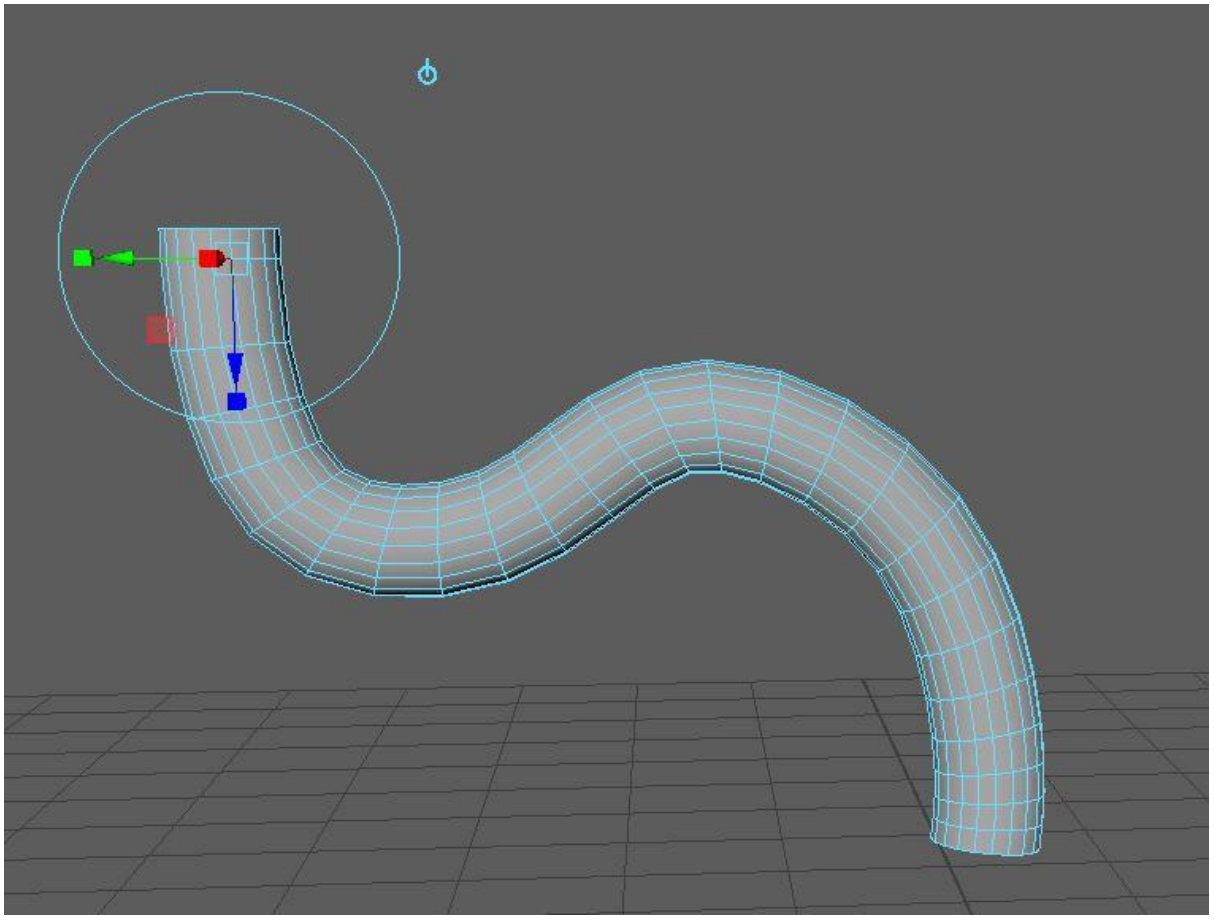


I then wanted to just add some horns to the dragon, using the same technique as the body and whiskers. I wanted them to be magnificent and span half the body of the dragon, which is what I decided to sculpt.

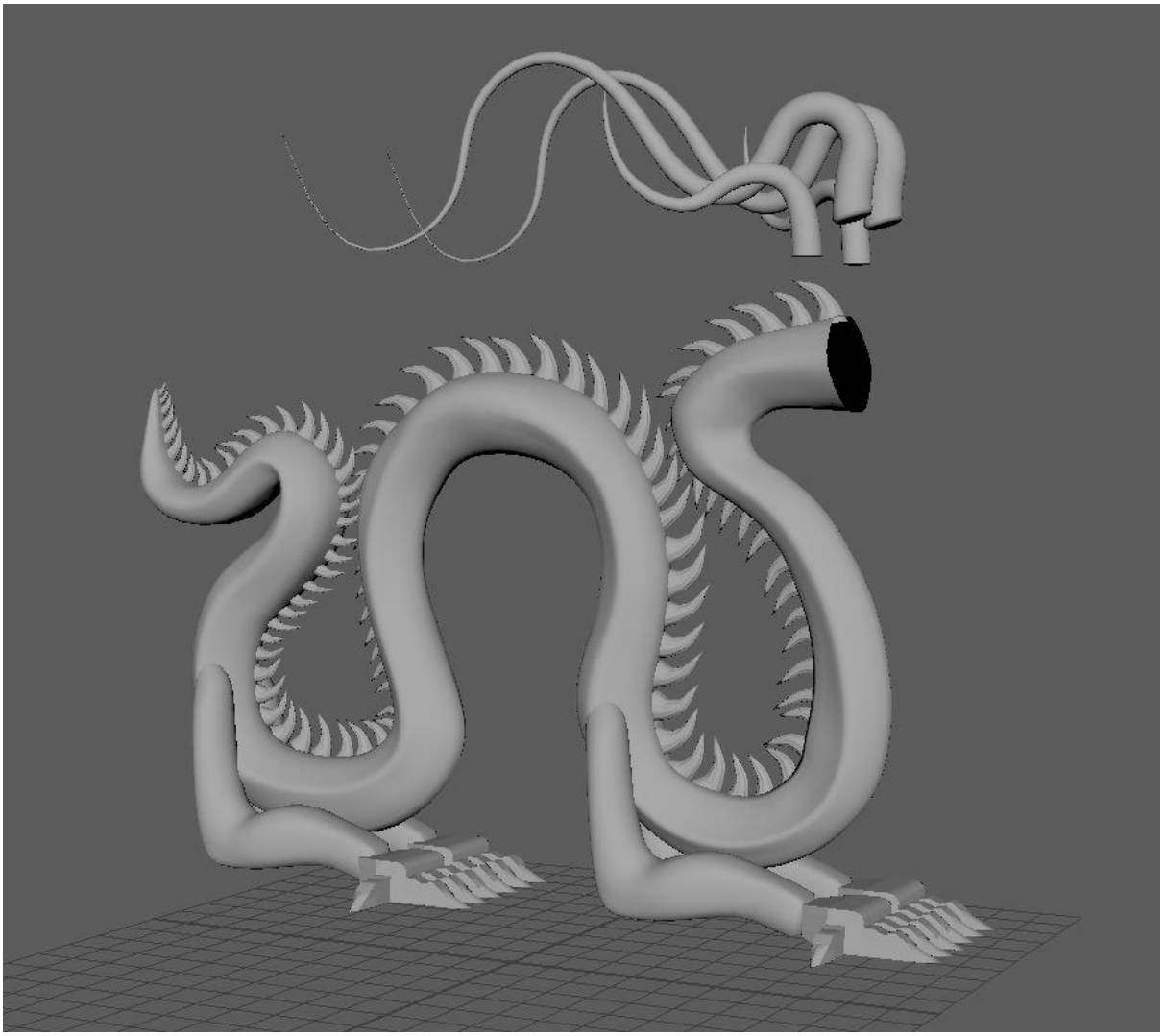




I noticed whilst creating these horns that I needed to use the slider in the details panel to add more divisions, or the cylinder does not change shape due to the lack of topology, which I fixed instantly before adding the tapering.



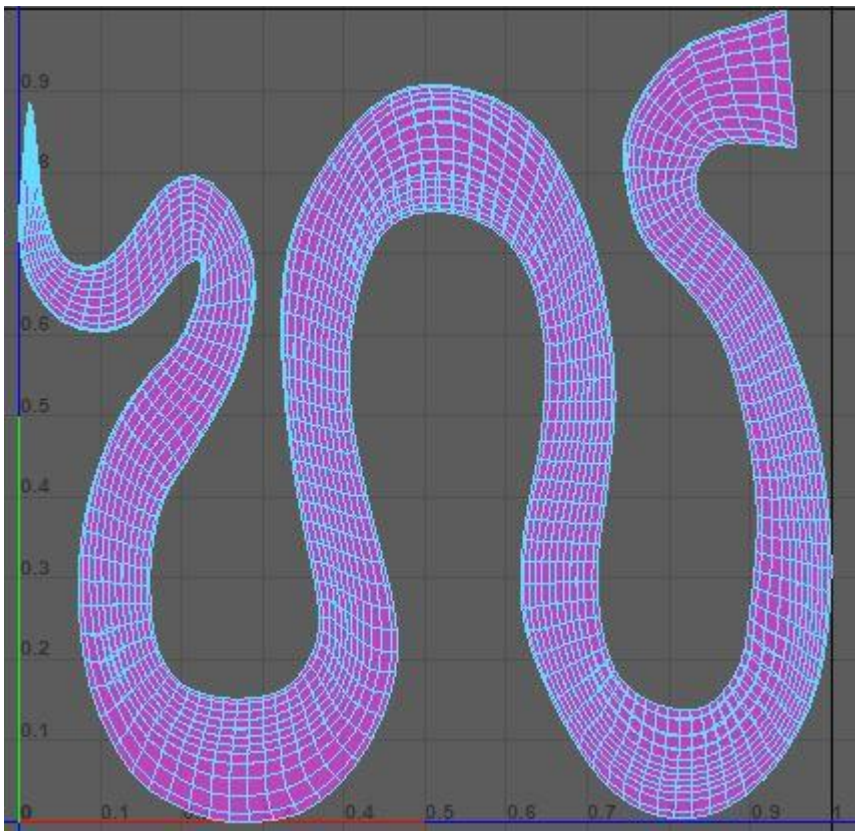
I fixed this by increasing the divisions in the editor panel, as shown in the image above the object is now curved.



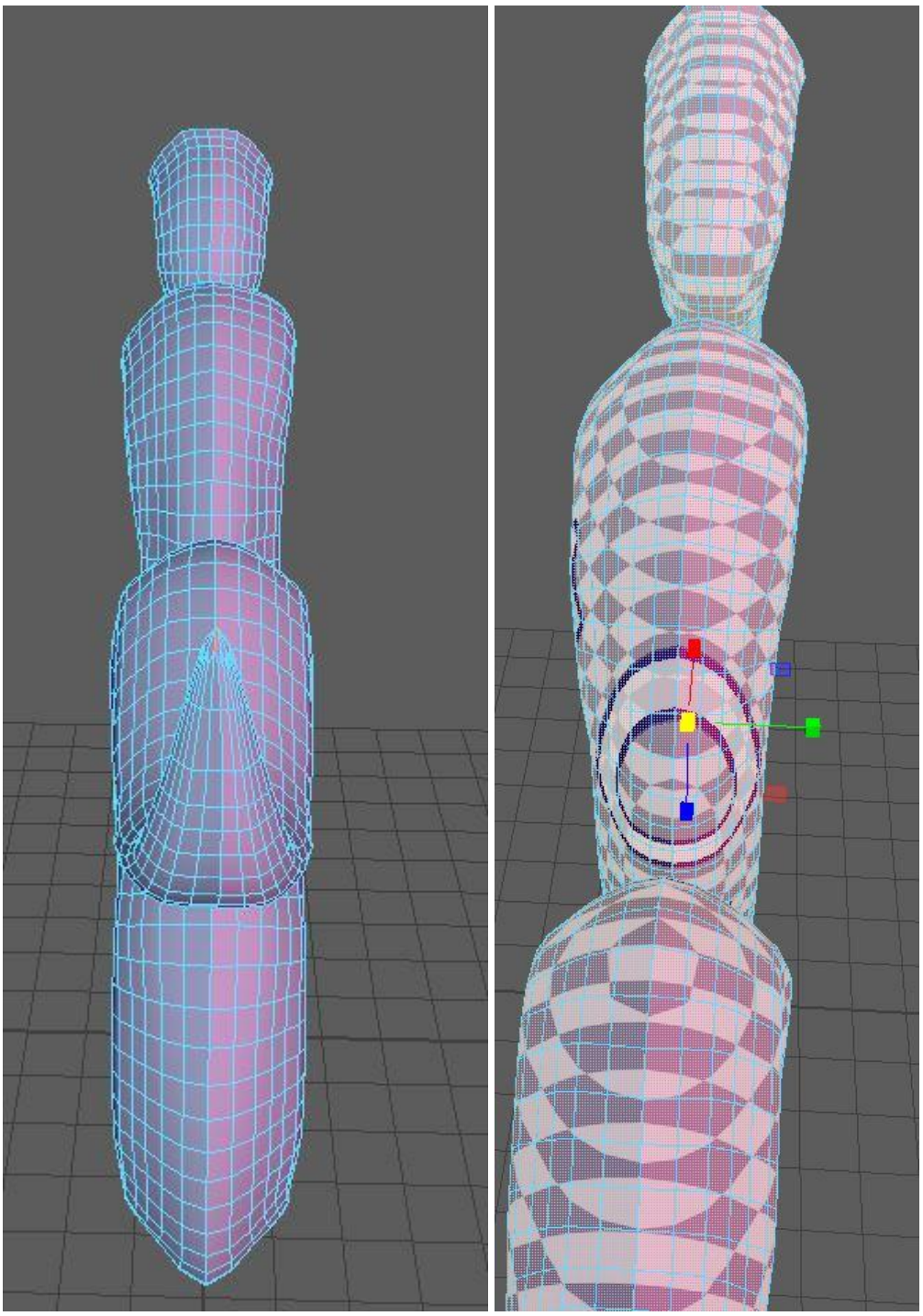
The completed low poly body parts and accessories.

UV

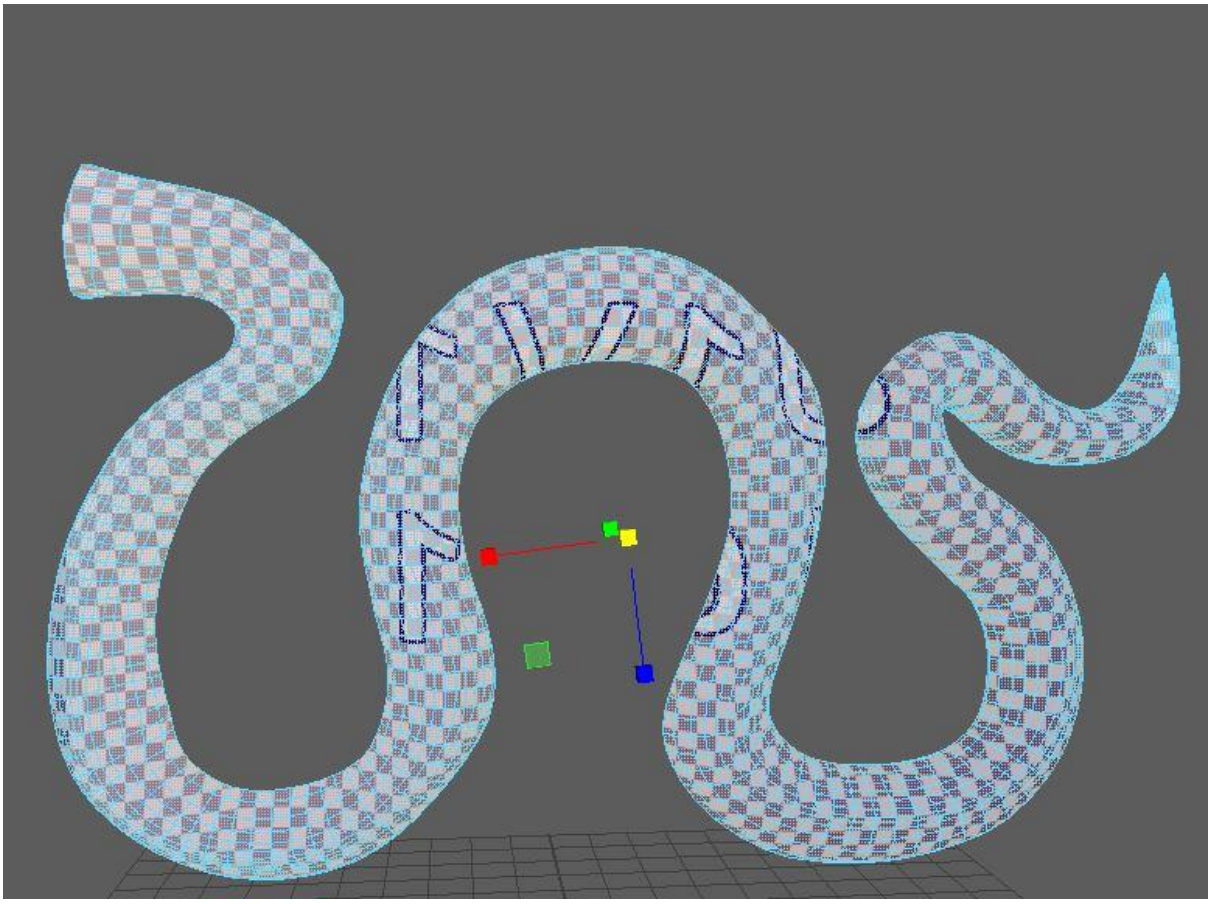
During my last brief I found a comfort zone when doing the Uvs of a model, as the 3D cut and sew tool made seams so much easier to produce, and view in the Uv editor. I began with the body, creating a seam underneath the body, and under the spikes so that the texture seams will not be visible when the model is textured. I used a planar UV on the Z-axis and spent time unfolding, realigning and warping the UVs until the texture pattern was perfect and not warped or stretched where the seams met.



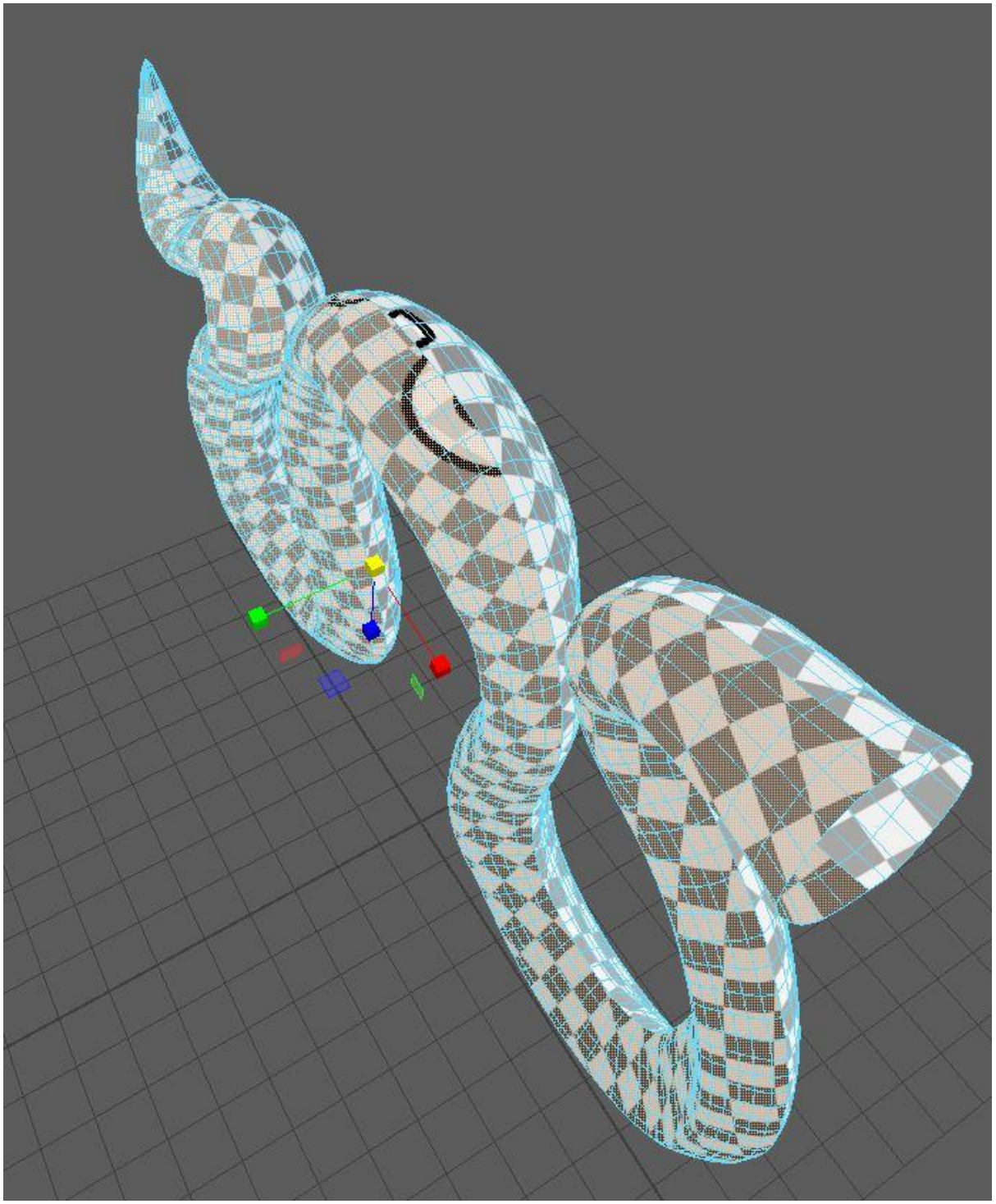
The UV of my dragon's body, the seam running along the bottom and on the top of the back of the dragon, cut in half with the 3D cut and sew tool. I placed the seams here as they would not be seen along the bottom and covered up by the spikes on top.



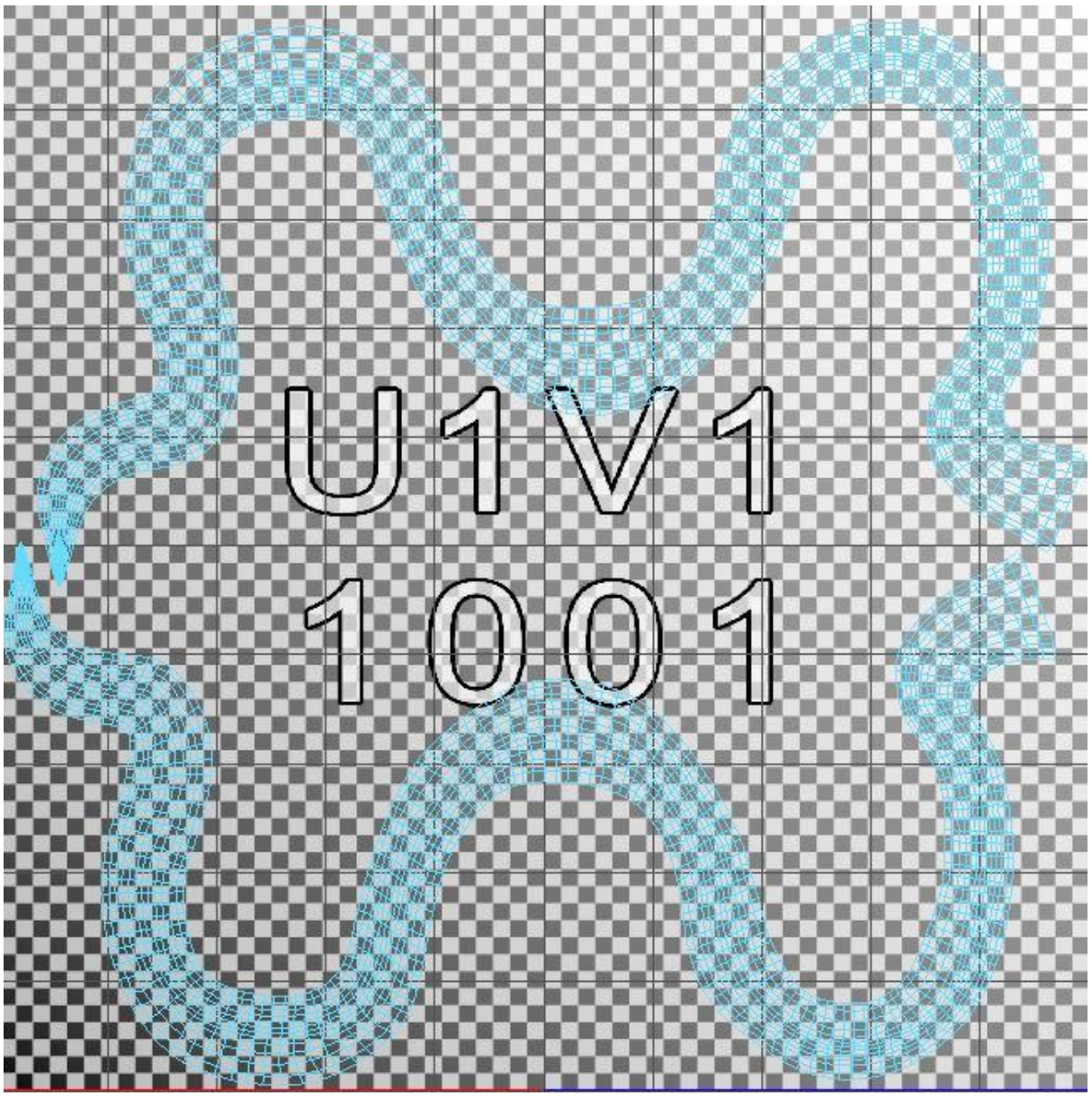
The texture below the spikes began to warp so I went back into the UV editor to play with the scale and unfold tool to try and fix these issues.



The textures were now completely fixed and I could move onto the other parts of my dragon. There was a small amount of pull on the back of the tail however it was only minuscule.

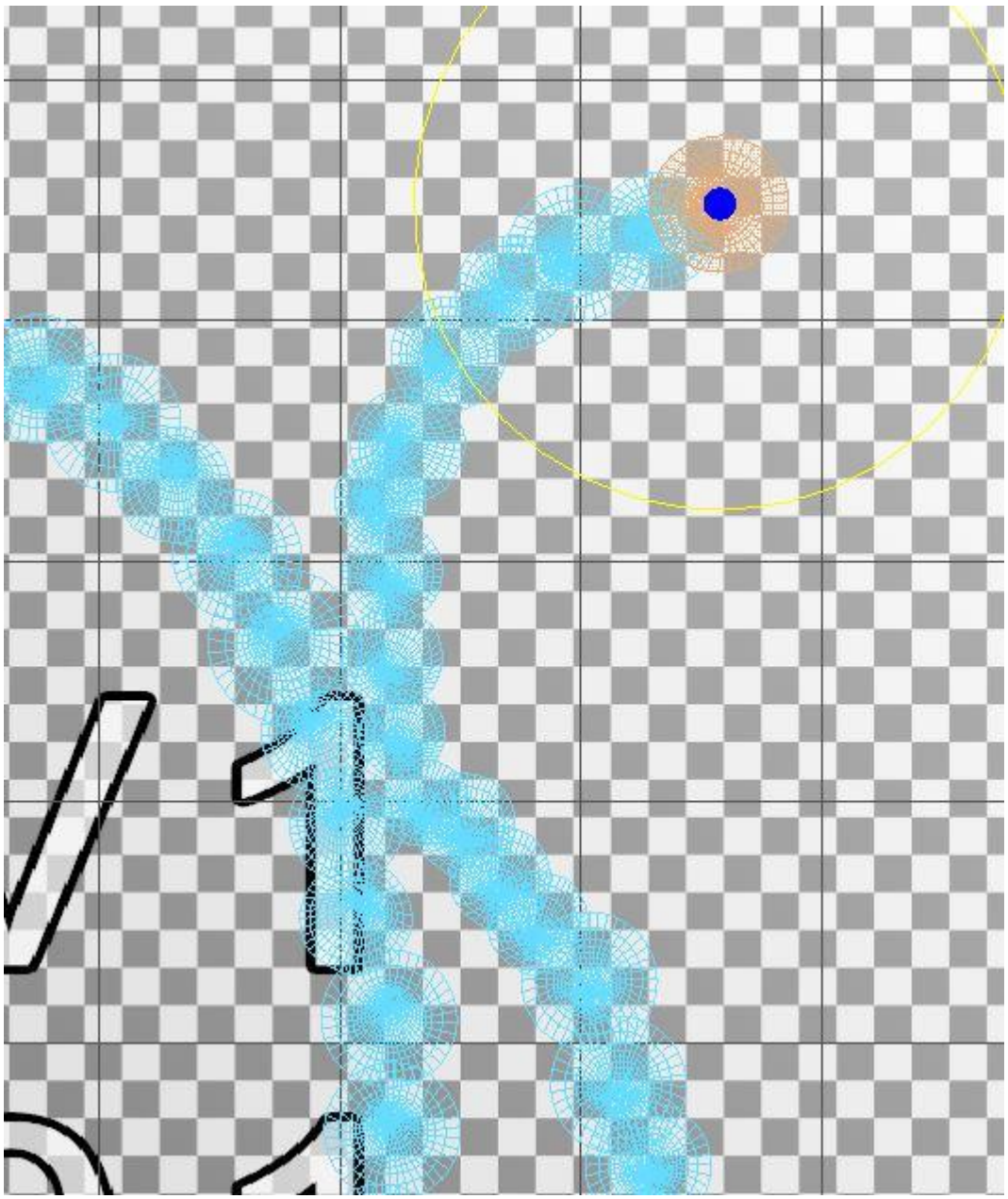


In the future I will try and line up the squares along the seams, however, it doesn't matter much with this model as these seams will be covered up with the spikes mesh.

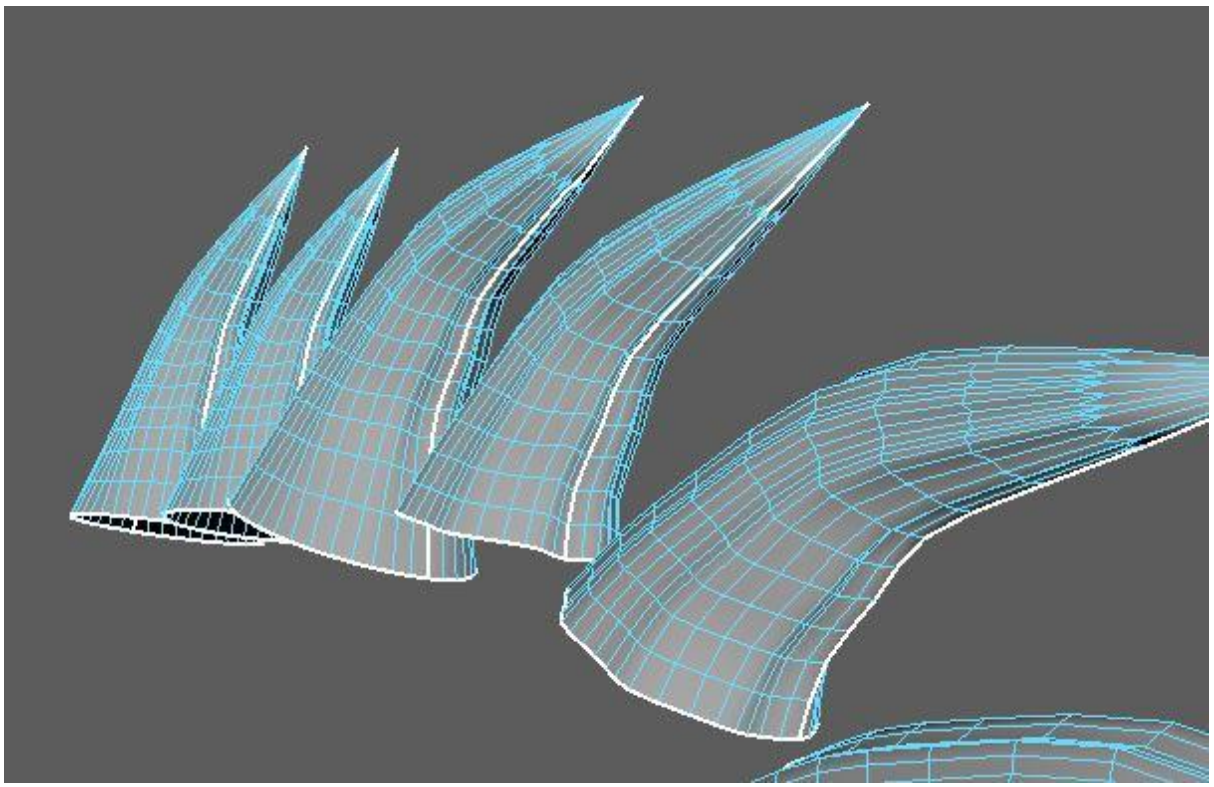


This is the final layout for the UVs of the dragon's body, and the textures are not warped. They are lined up well and there should be no issues with resolution or baking.

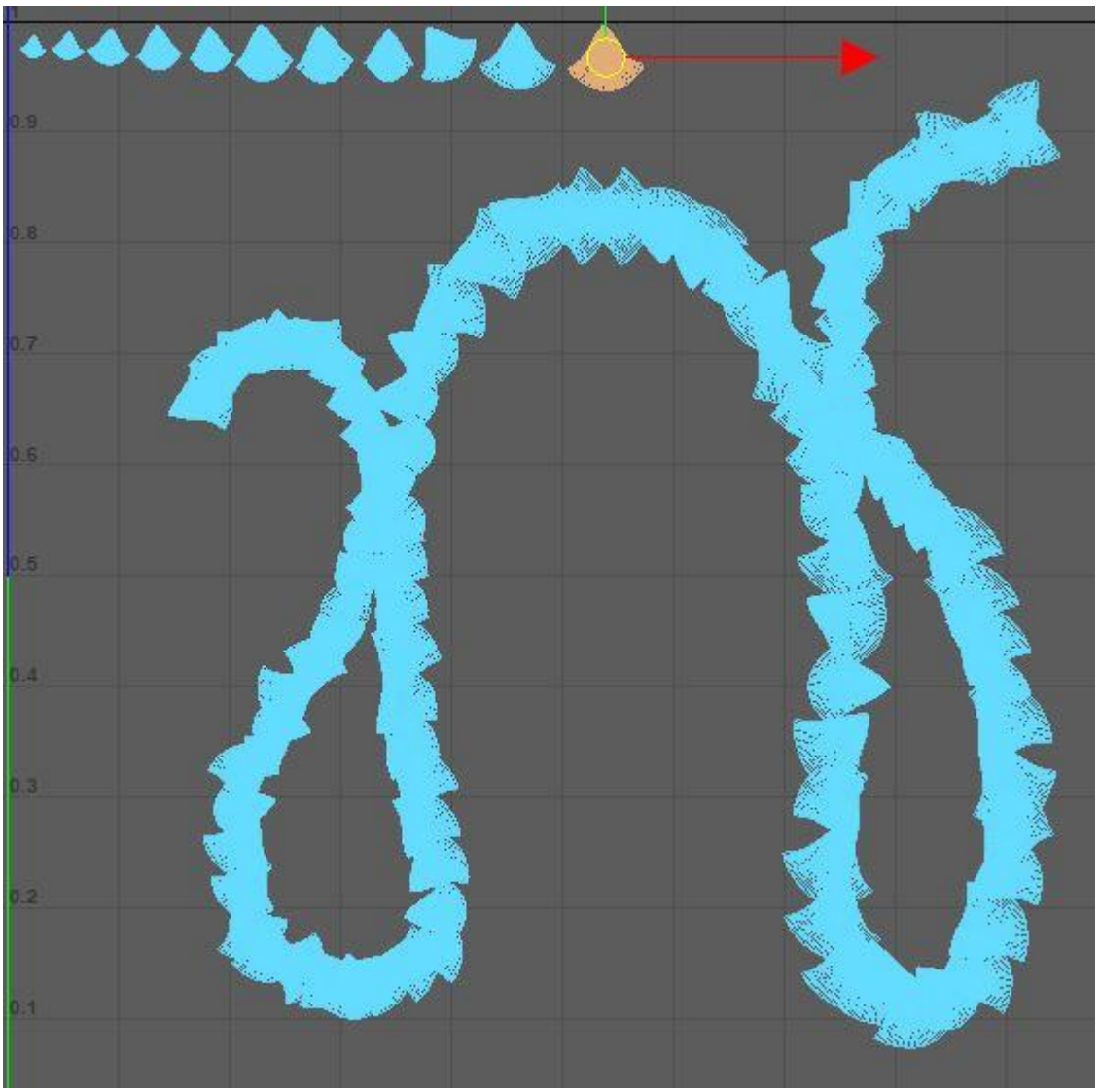
Next it was time to Uv the spikes. I decided I would create the seams by running the cut down the back of each spike, so that the seams would not be visible. These would then spread out into small triangles in the UV editor which I could unfold and optimise.



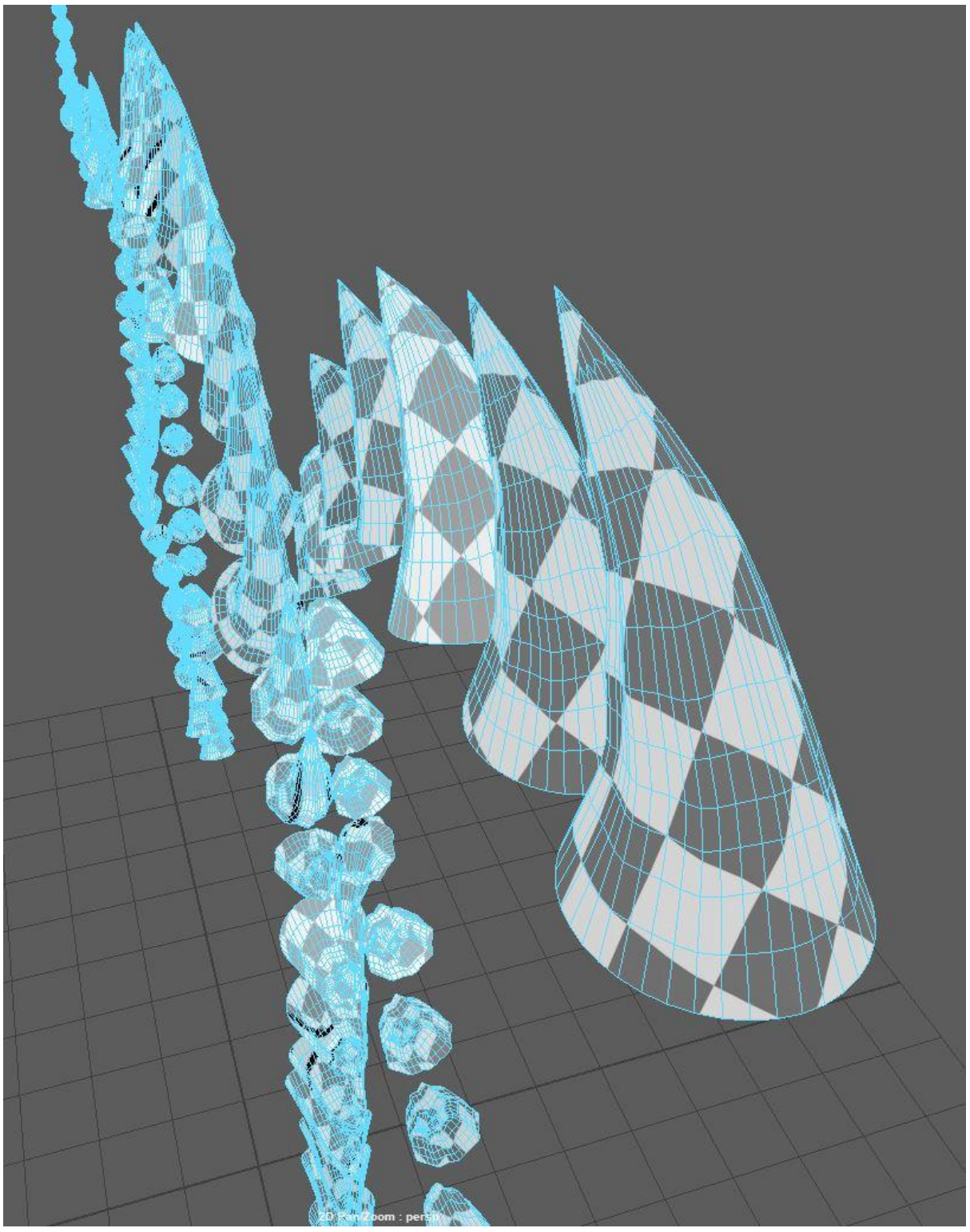
This is how my UVs for the spikes along my dragon's back appeared when I first placed them into the UV editor. I then individually cut the seams on the back of the spikes where they wouldn't be shown and unfolded them in the UV editor.



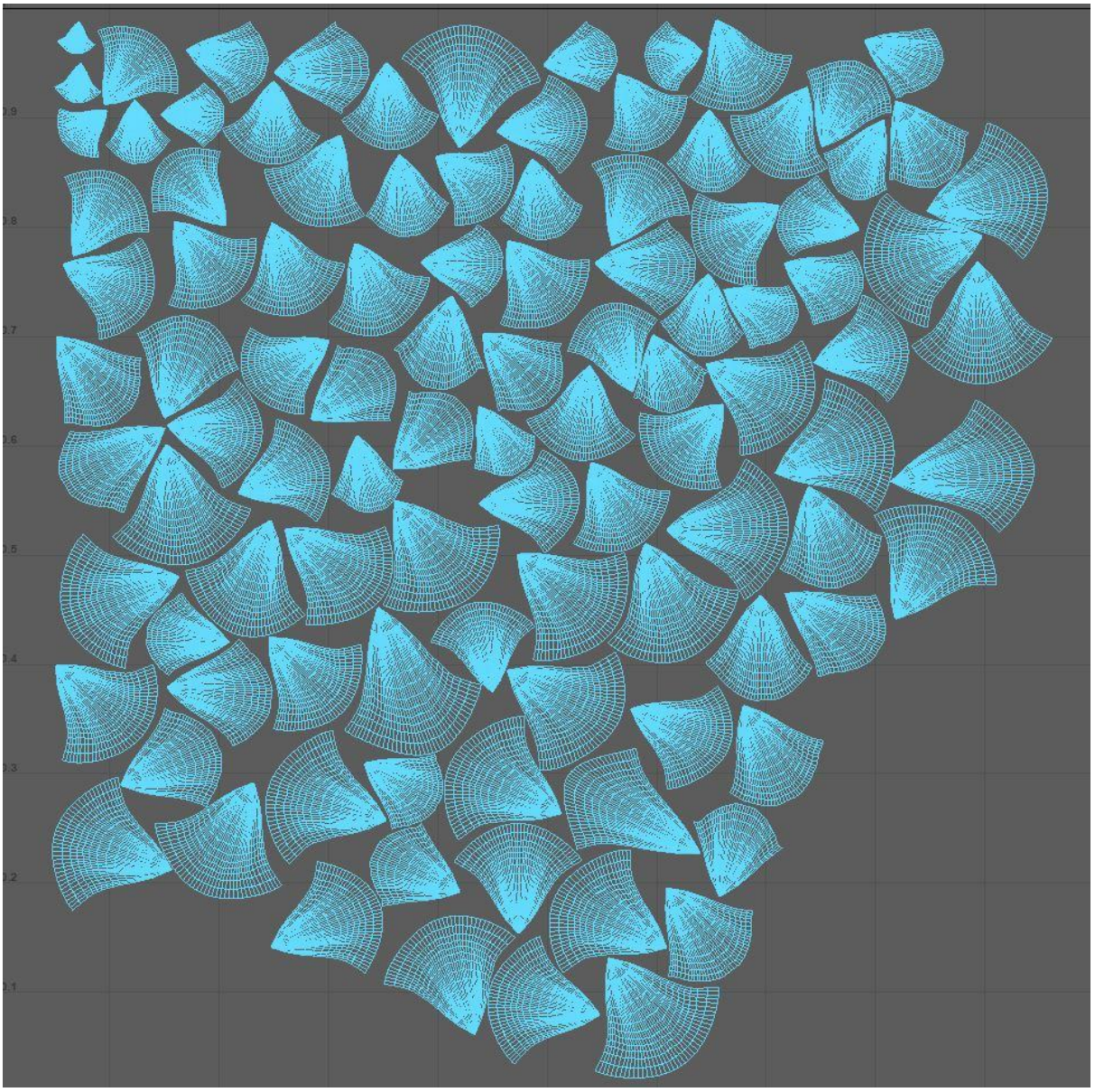
Here is an image of where I cut the seams on the spikes.



I began placing the spikes in a row to be able to make them bigger so the resolution was higher.

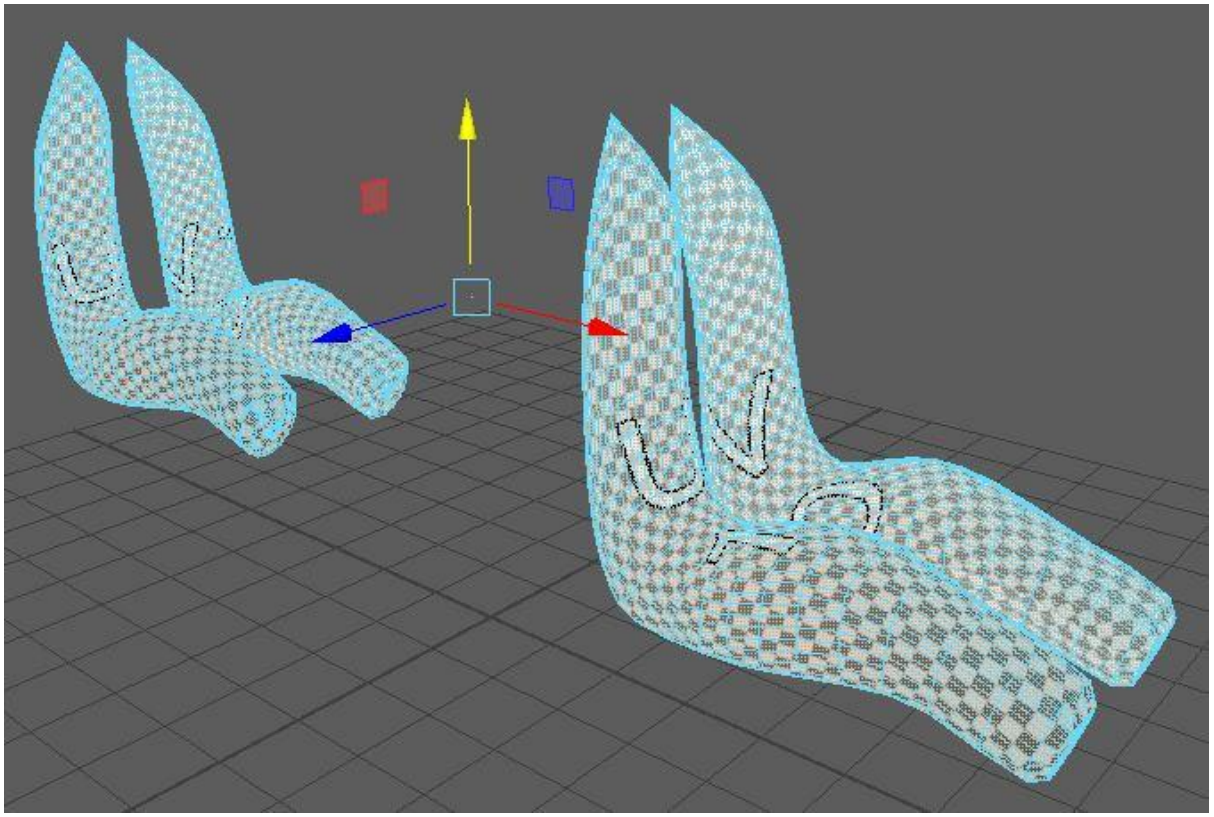


Here is an image of the texture applied perfectly after unfolding.

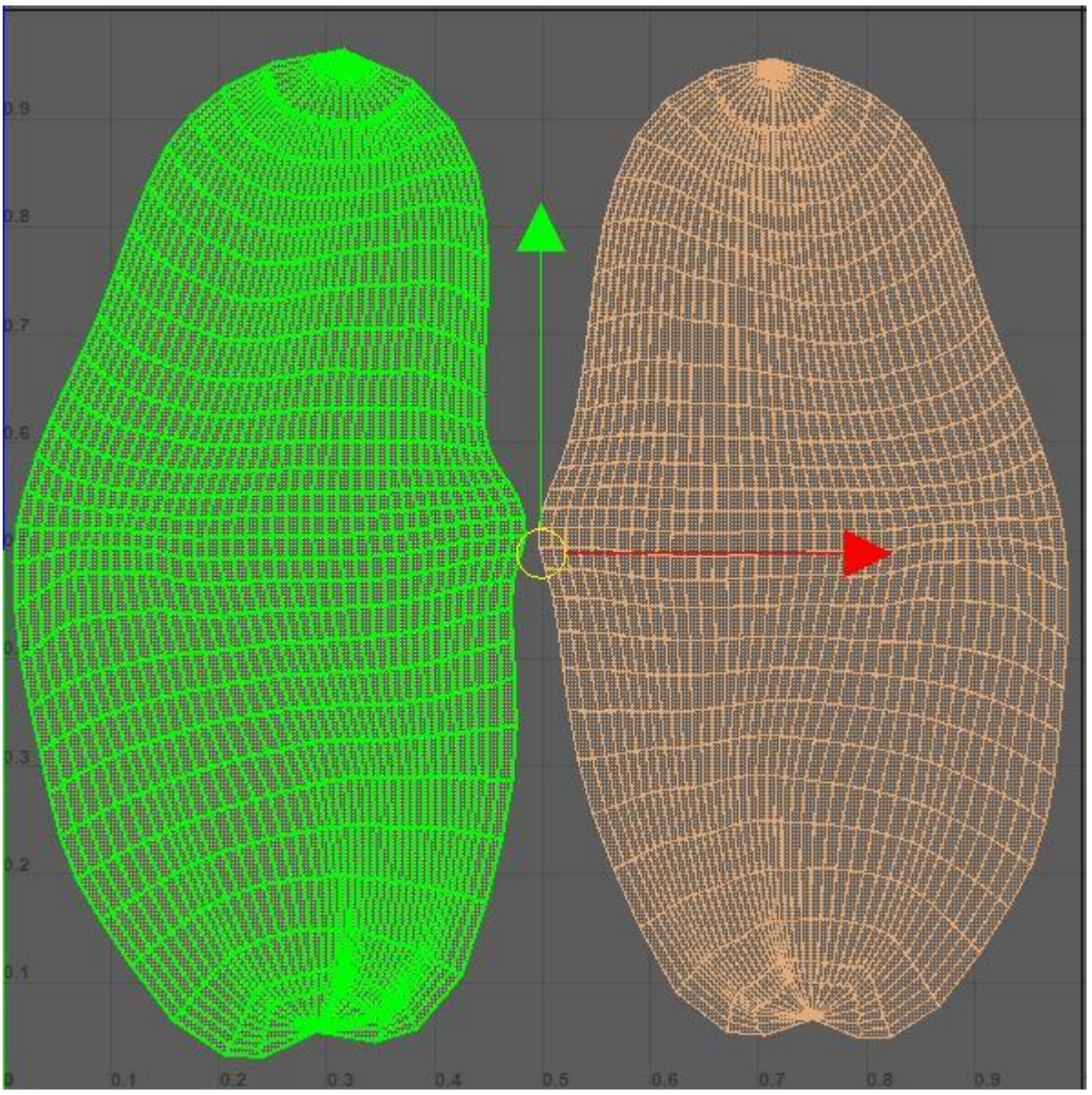


I may go back and edit the final UV layout to fill more of the space. However for now I am satisfied with the resolution and positioning of the uv map.

I next decided to UV the legs, which took a simple unfold and optimise, with the seam running alongside the back of the legs. I overlapped the legs so that I could have great resolution on the legs.

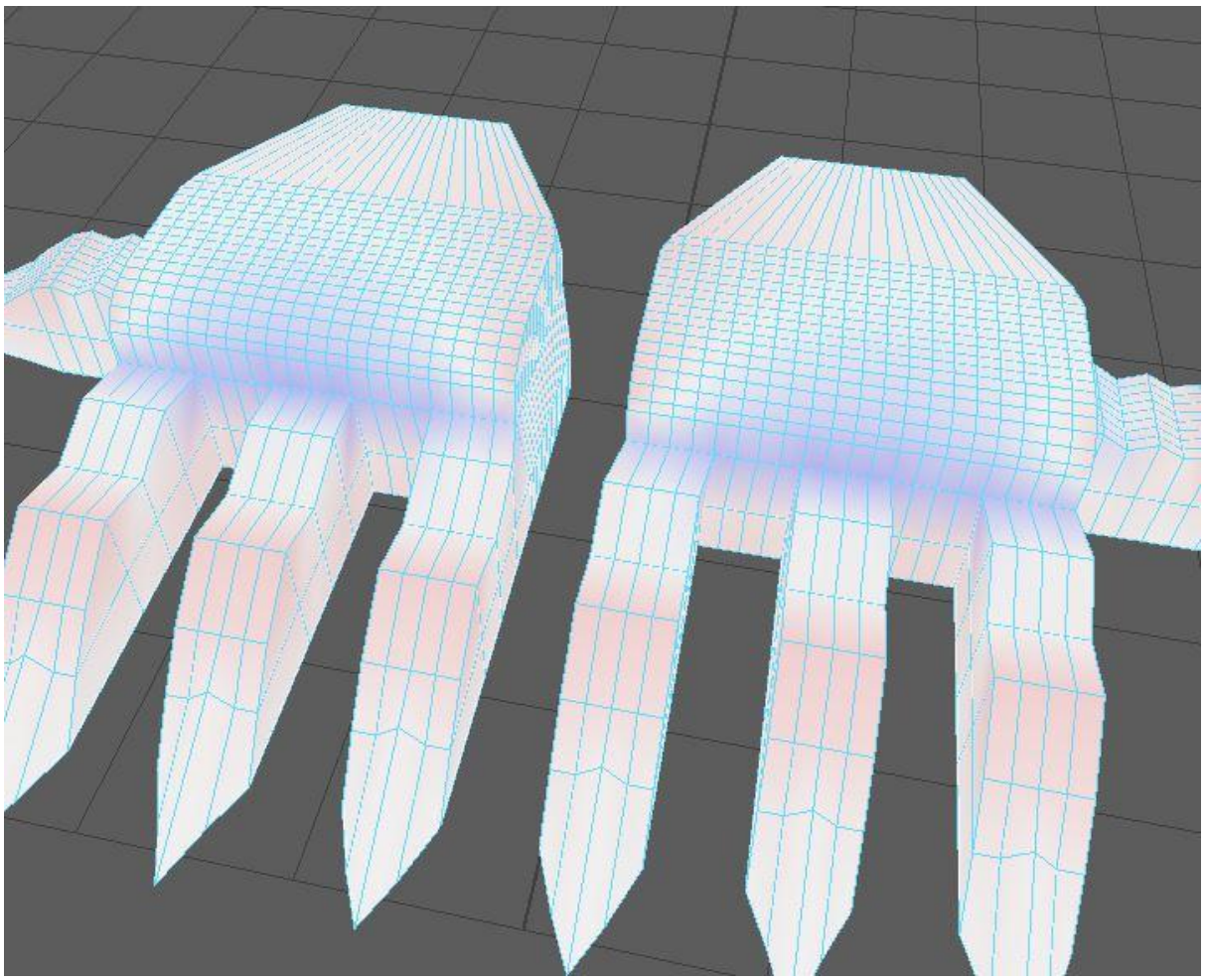


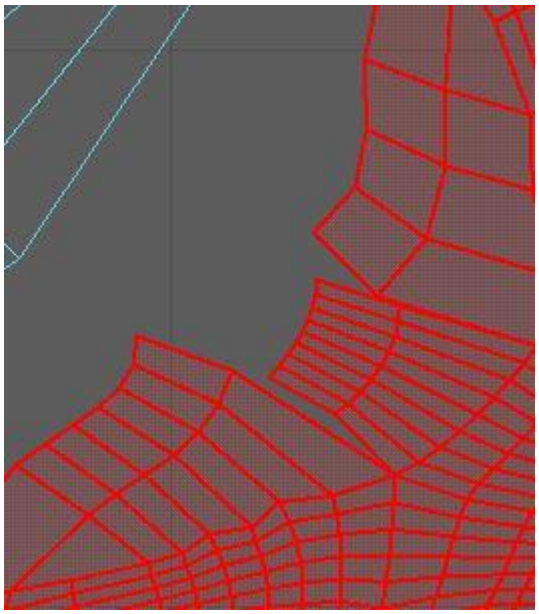
Here is the texture of the legs, a high resolution and scaled well. There was some slight warping on the front right leg however I don't think it will be that obvious when textured.

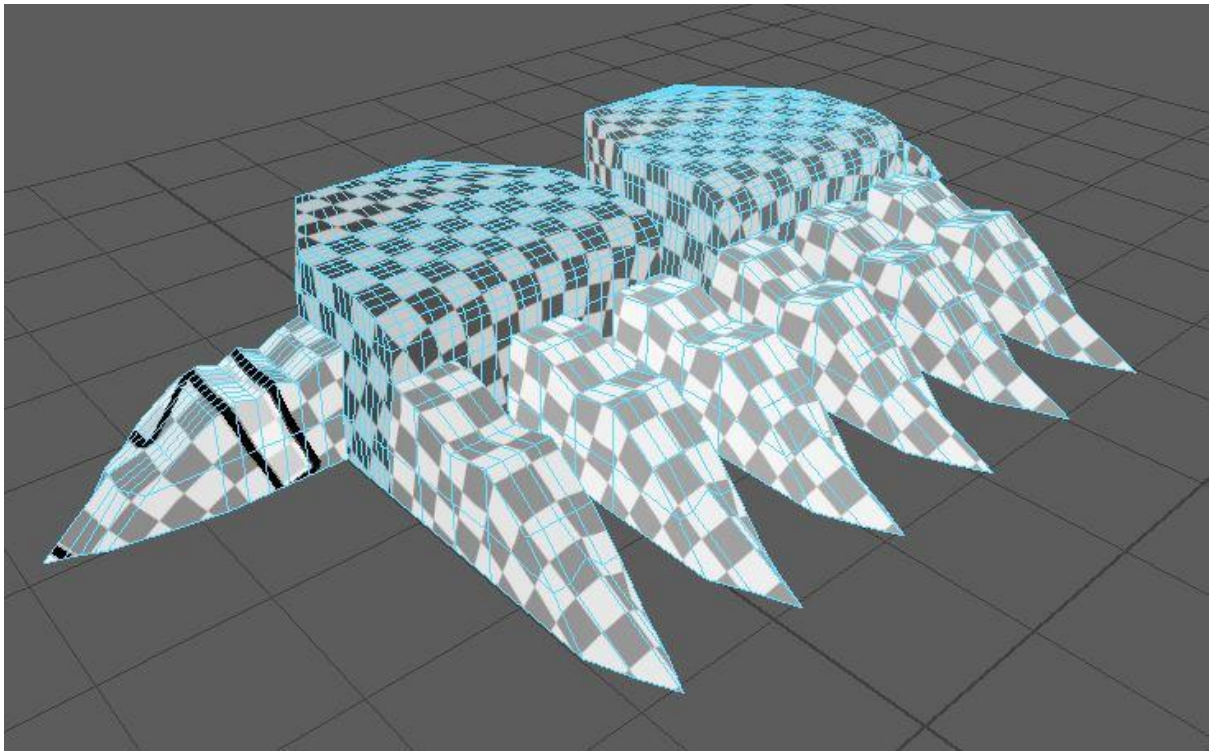


Here is the finished UV of the legs. In the future I will use the unfold tool more to try and make the curves of the legs more even. I snapped the front and back legs together with the snap tool.

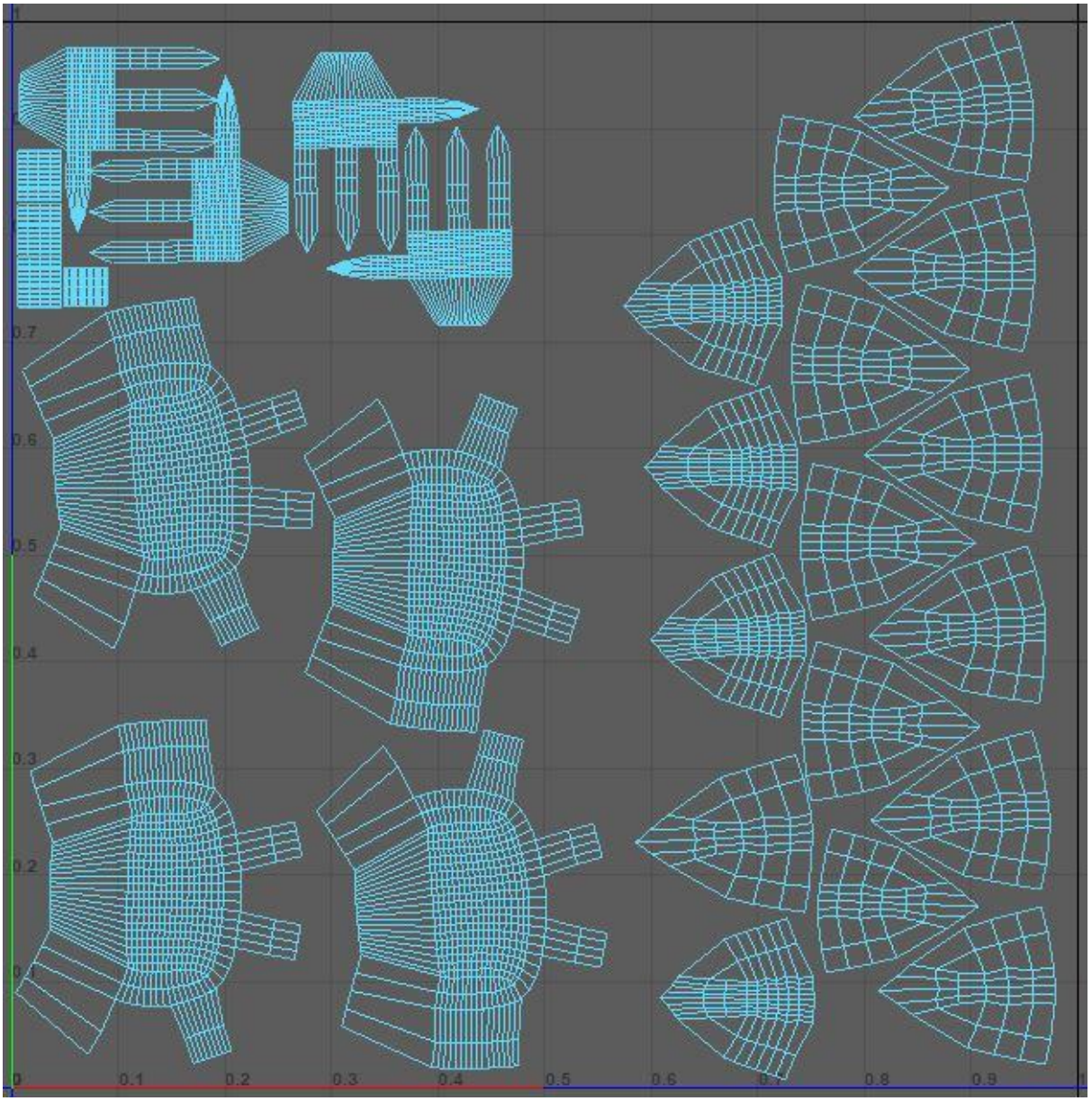
The trickiest Uvs I have done on the model yet were the paws of the dragon. It took a lot of the 3D cut and sew tool to work out which seams I needed to be connected and which should be cut. I decided to completely detach the underside of the paws as they are not important, so I could make these smaller in the UV map. It took a while to sew the fingers together so that the textures would match up and not appear warped. It was stressful to try and make the fingers have a good resolution as well as the back of the hand, however playing with the unfold and optimise tool, as well as the cut and sew tool helped to piece/separate different edges of the UV, without creating harsh seams.





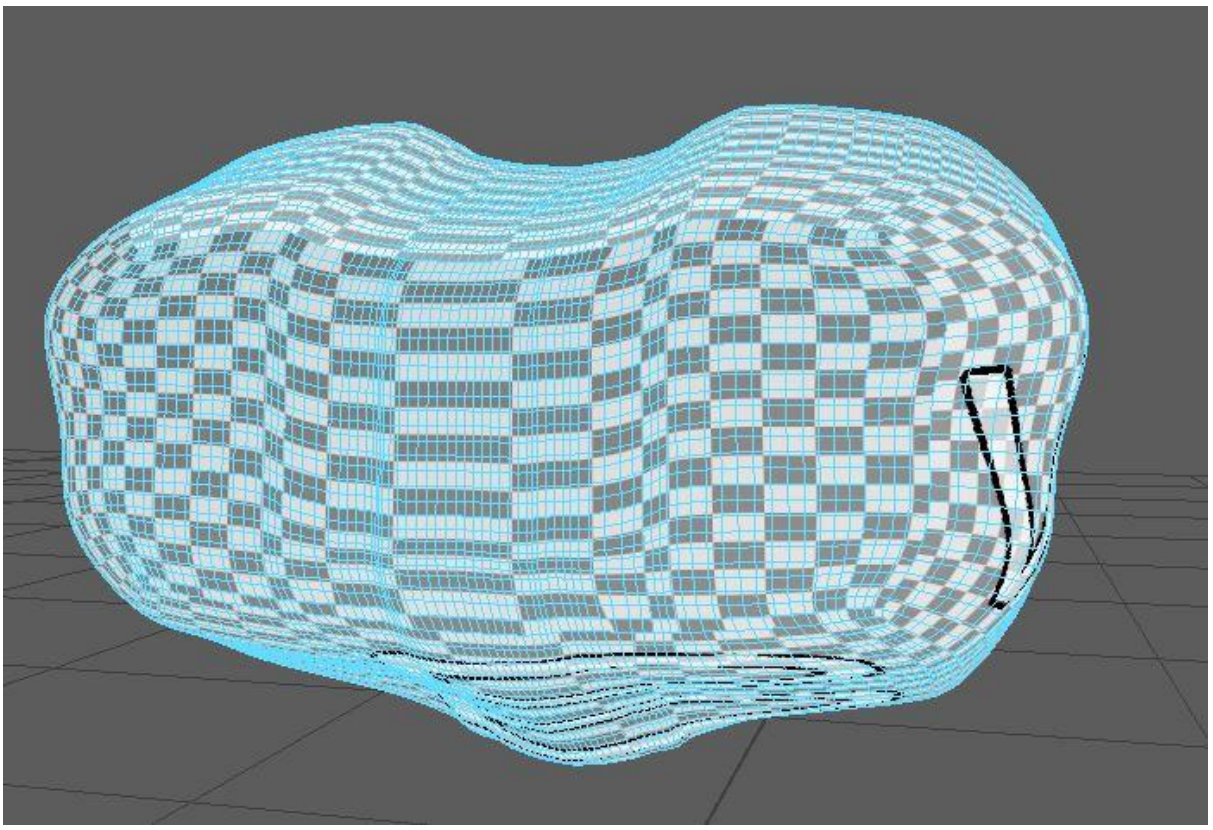


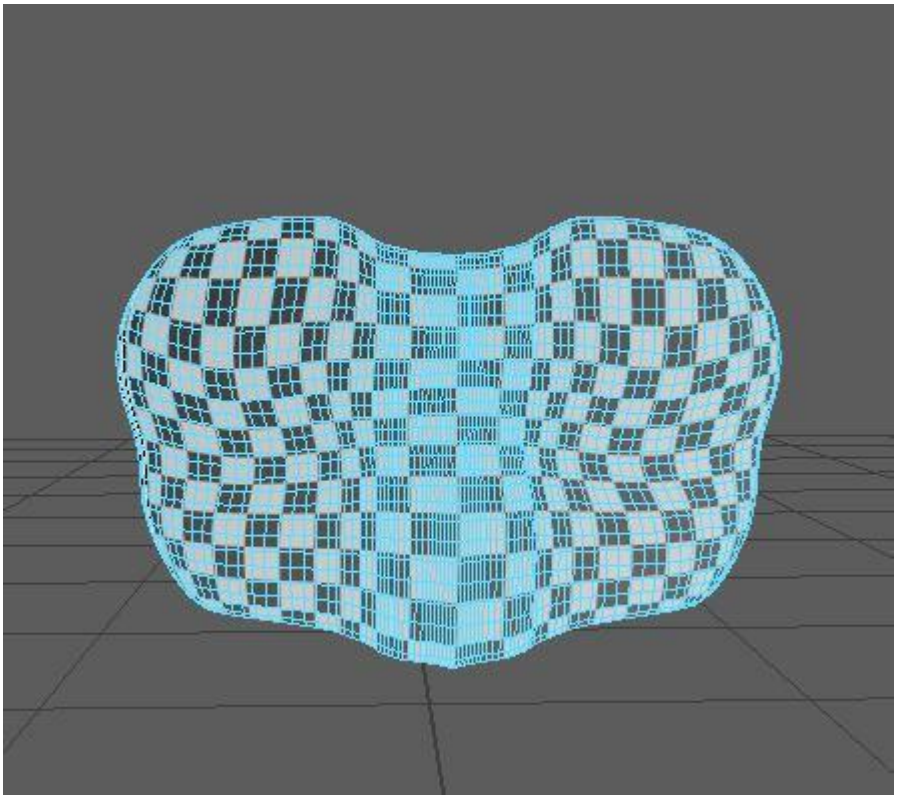
Here is the finished texture applied to the paws. Thankfully the texture was not warped and ready to be textured in the painter software.



These are the final UV maps for the paws.

After creating this, I decided to Uv the small snout I created. I used a simple planar UV, which was slightly awkward to UV as the shape is so peculiar.

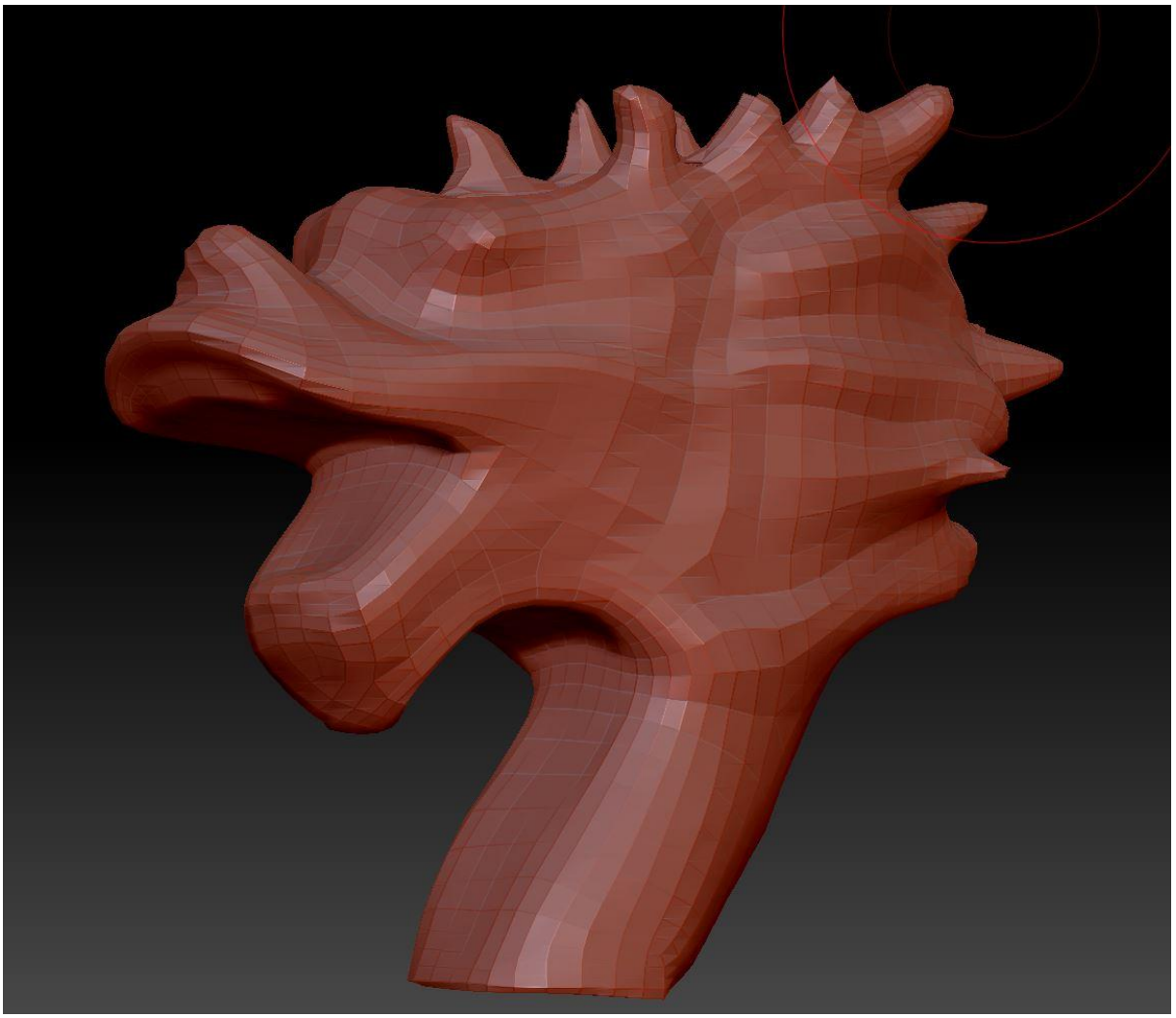




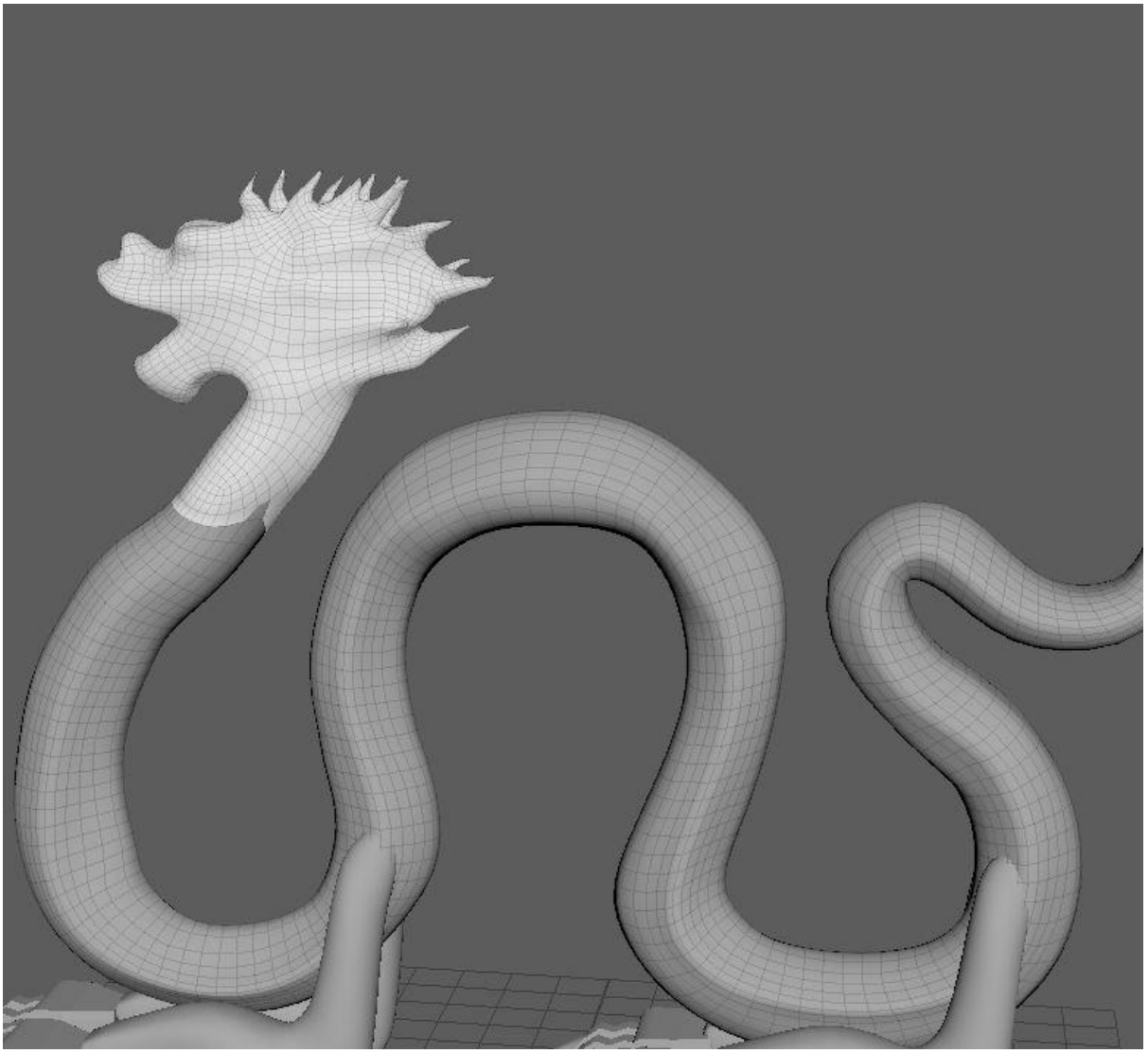
As you can see the texture is not perfect, however for such a small part of the model I am not worried about the slight bend of the texture.

I decided to completely scrap the nose, and instead make the head as one whole mesh in ZBrush and then subdivide it to make it a low poly mesh. This was an easier process

and I'm glad I changed my decision on completely doing the whole of the model in Maya. This saves me a lot of time and stress and is a demonstration of my problem-solving skills, when one software isn't working for me I can utilize my knowledge and know what software is best for each process. The sculpting tools in Maya are not up to the standard which I can achieve using Zbrush. Here is how my dragon head looked in Zbrush after playing with the subdivs to add details and divide them back down again.



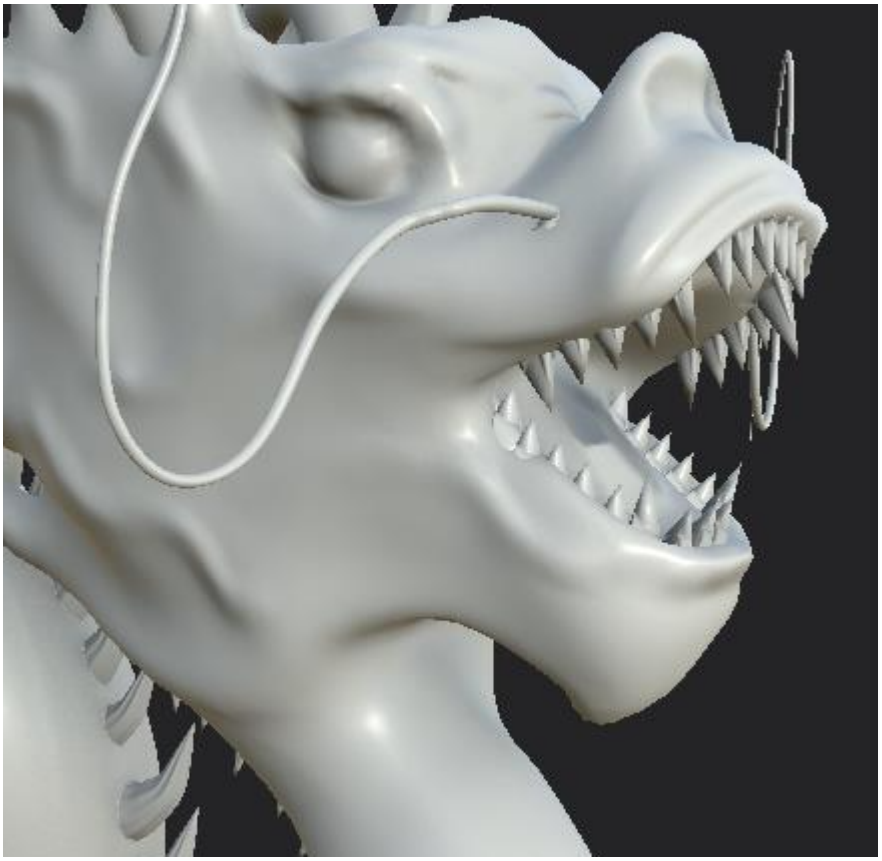
After this head was complete, I added it into Maya and connected it with all of the body.

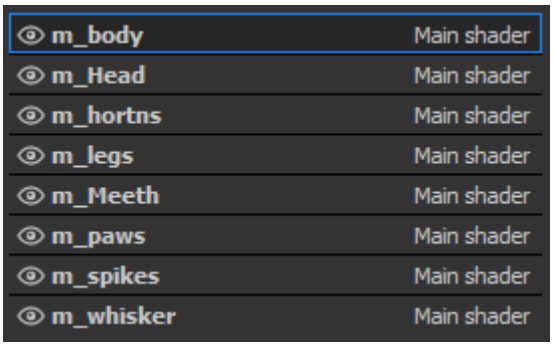


Finally, once I had all the pieces of the body, I could now warp and edit the body to how I wanted it to look. I made the body thicker as well as the legs, as well as adding it into Zbrush to play more with the model, keeping it as a low poly and ensuring the UV maps remain the same. I made the paws less harsh around the edges, using the soften edges tool, as well as the smooth tool in ZBrush to give them even less of an edge. I constantly referenced images of older depictions of Chinese dragons to keep my model as true to the original artwork as I could.

I then decided to make a high poly version of the model in Zbrush, however, I focused mainly on the head as I was going to texture the body heavily in Substance Painter, using a scale alpha. I did not need the body to have details in addition to this. I added eyes and decided to add teeth, however, I couldn't do this in Zbrush with the high poly as there would not be enough topology for my maps to project, so I brought the model back into maya and quickly made a row of teeth, creating a UV the same way I UVd the spikes, cutting the seams at the back of the teeth.

After the high poly was complete, I opened the substance and started to texture. I baked the mesh maps down, starting with the normal map to check there were no errors before baking the rest. I baked the model in 2480 resolution to ensure high quality and to meet the requirements of the brief. The model baked well so I began to paint my textures.





After my model sculptsMaya was complete I applied separate materials to each main part of my model in Maya. I labelled them accordingly and opened the model in substance painter. I began by baking all the maps down using my high poly to bake any details, ensuring to bake down the normal map first to check for any errors quickly. I didn't edit my low poly too much, as I wanted a lot of the main details and depth to be

textured rather than baked down from a high poly. The only thing I did sculpt in the high poly was the eye shape to create the shadow under the brow bone and the eyelid. I also added some strokes where the horns were. The first thing I did was create a fill layer on the M_Body. In this fill layer, I added a base colour, a height map and a roughness map and imported my scale texture which I downloaded from substance share. The scales were originally blue which I didn't want so I applied the hsl_perspective filter which allows me to edit the hue, saturation, and lightness of the texture. This filter is great, as when creating my textures and materials I don't have to get the colour perfect the first time around, as well as if I decide to change the colour of the texture after modelling it to a colour that feels more appropriate I can quickly just add a filter to modify it.

After I achieved an emerald green colour on the scales I then added two more fill layers. I added a scale fill layer below the green scales, coloured gold with the hsl_perspective filter and then went back to my original green fill layer and added a white mask. I painted on the white mask with black to reveal where I wanted gold to shine through. This made a lovely gradient on the leg leading down to the paws as well as a bit of gold on the tip of the tail. The other fill layer above the green base layer is used to add very soft mint green highlights to where I wanted my dragon to be brighter such as on the lower stomach. I again used a black mask and painted on with white where I wanted the lighter parts to show through. I have always used masks during my time in using Adobe Photoshop, this comes naturally to me to use the masks and I'm very happy that they are implemented in substance.

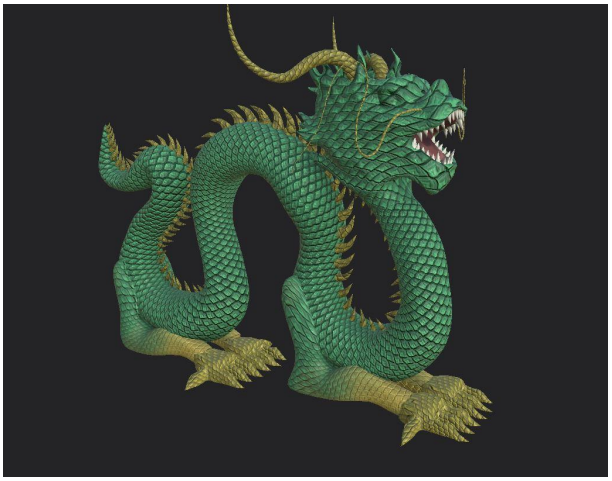
I then moved on to the dragon head. I began by adding a base using a smart material called 'creature skin'. I loved using smart materials because it has an incredible level of detail instead of just a smooth base colour, all in one folder. This saved a lot of time, instead of creating my skin from scratch. Within this creature skin folder, I manually clicked the different layers and directly edited the colours and masks already present. I changed the colour of the darker blotches, lighter edges and undertones to match the colour of my dragon's body using the eyedropper tool. I then created multiple paint layers above the creature skin not needing to use fill layers as I wanted to paint on particular details in small sections of the face. I began by selecting a metallic gold brush and changing the colour slightly to a more Tuscan gold as opposed to a classic butter gold which tends to have more orange tones. I then decided to increase the height map from 0 to 0.2 and began painting on the details for the lips and some curls around the face leading up to the eye, using a soft calligraphy brush. I enjoyed painting curls however it was rather tricky to master them in one flick of the wrist. Next time I will add a black layer mask and sharpen up the edges when painting on the face directly with black instead of trying to get the curls and edges right the first time. After that, I was happy with the gold details on the face, completing it with some golden curls on the chin. I kept the same colour ID and made the whiskers the same colour. I noted down the hexadecimal code just in case I could not achieve the same colour. The eyedropper

tool works well however if the colour is affected by the light and shadow rendered on the model, as well as the layer masks making it metallic, it could make the colour appear darker.

I did another layer, naming it ‘eye_balls’ and began directly painting on the eyes with a soft watercolour brush. I didn't know how to activate symmetry on the other side of the model, however, my model isn't perfectly symmetrical anyway so I had to just paint the eyeballs twice the same way. In the future, I'll make sure my low poly and high poly model is symmetrical to save me time whilst texturing. I added a hot orange background to the eye and then added bright yellow veins, as well as darker orange veins to contrast, almost like the blood vessels, had a shadow. I made sure to focus a bright yellow soft background on where the pupil would be to make it look like the eye was glowing. I would love to have a tool that made the eyes glow, however, I'm not sure if this is something that you would have to add in an engine as opposed to a substance painter. In the future, I will look into this because I would like to add particle effects or some kind of glow material to my models. I then painted on the pupil and added a white dot to make it change the direction of where my dragon was looking and repeated this process on the other eye. I also painted the inside of the mouth with a pink brush, adding darker pink in the middle and blending it out with the watercolour alpha selected. I did the same thing to the veins on the eyes later.

I also clicked on the base of the face and added the scales. I tried my best to rotate and change the scales to make It blend well with the neck, the seams are slightly obvious, so next time I will keep the head and body all in the same material. I added a black mask and rubbed out the scales on the inside of the mouth and used a grey brush to soften the scales at the top of the head and on the tips of the horns. For the Horns themselves, I added another smart material called polished marble and went into the smart material folder and directly changed the colours within there to make the horns look a bit more yellow than they were porcelain white. I picked out a hard brush, turning up the height map and turning off the metallic map, I painted directly onto the UVs with a quick swipe to create some bands around the horns for extra detail. I then went back to the head and painted the tips of the horns red, adding lots of details like curls and blending gradients to make the green fade into the red seamlessly. I also added shadows and hints of red around the eyes to make my dragon look angrier and more life-like as she would not be perfectly symmetrical all over. I also added a fill layer to the teeth to make them more yellow; they didn't need much texture, so I just turned up the roughness. I added some fill layers to the spikes keeping them the same colour as the red-tipped horns with the eyedropper tool and played around with a grunge alpha on the roughness map to make the spikes look a bit more coarse. After adding some more finishing touches I was ready to render the model. I pressed the camera button and saw what it looked like in the light. I could tell that the scales weren’t as reflective as I would want so I went back into the substance editor and made the metallic map on the scales way higher of a value than it was previously. I re-rendered my model and the

scales were perfectly shiny and ready to be placed in Unreal Engine. I used Unreal Engine as I'm very confident building quick environments to showcase models and other assets much like I did in module 10:1 character rigging with my final rigged character. I placed my dragon in and imported a few meshes of Chinese temples into the engine as well as some point lights. I went into the post process volume, adding lens flares and got some great snapshots of my final textured model. I will include the images below as well as some screenshot of the process of me texturing my model.



There was some slight warping of the scaled on the front right leg however I didn't have enough time to go back and fix it, though it isn't that noticeable.

My dragon imported into Unreal Engine, fully textured and ready to be posed, not yet placed in a scene.

A render of my dragon in a promotional scene, looking huge and scary. I imported the assets myself from sketchfab and built a small temple scene to place Chaofeng, as in his character description, he hangs around temples a lot of the time.

Another angle from the Unreal Engine scene.

Evaluation

What happened on the project?

On this project, I developed a character body using Maya, Zbrush and Adobe Substance Painter. I acknowledged and comprehended the skills needed to use the software and produced an outcome. I produced a high poly model, a low poly model, UVs and baked textures at a 2048x2048 resolution. For this character, I created a backstory for them, being a mythical Chinese dragon that would be used promotionally for a game, or possibly in a cutscene. I researched different colour theories and presented them alongside the themes of the character, displaying the different colour choices within concept art, and also performed research on the anatomy of my character.

What was produced?

I created a 3D sculpt of a Chinese Dragon. I created the low poly body, legs, paws, spikes, whiskers and horns in Maya, however, I made the low poly head in ZBrush and exported it into Maya. I then worked on my UVs for the model, using the Planar UV mode on the X-Axis and then using the 3D cut and sew tool to create the seams. After producing this low poly and its UVs, I placed all of the meshes together to build the low poly dragon and exported it into Zbrush where I produced a high poly model, adding detail to the face and body, using various brushes and alphas. When this was complete I saved both models in an FBX file format. I imported my low poly model into Substance Painter, choosing a UE4 output and DirectX. As the model was imported so were the multiple materials I used. I baked down the normal map on all of the textures to test for errors. When the bake came back clean I then used my high poly mesh in the software to use this as a reference to baking. I chose a 2048x2048 resolution to bake down and started again with the normal map to check for any errors. When the bake came back clean eventually after changing the max frontal distance and changing the antialiasing to 4x4 I baked and it came out seamlessly. I then began texturing my model using alphas, grunge, smart materials, custom materials and just hand painting on specific details. When the texturing was complete I exported the model into UE4 and placed it in a scene which I made myself for a final render.

What did I enjoy the most?

I enjoyed UVs the most this project as I have become confident with how to UV to a high standard. I love the satisfaction of doing a perfect UV as well as using my problem-solving skills to see what needs moving and editing within the UV map. I have become very quick when producing UVs and can do so much more confidently after completing this project, especially with how many UV maps I had to produce for each material.

What was the most challenging?

The most challenging aspect of this module was trying to sculpt the head. I struggle to create organic shapes and could not produce what I wanted to in Maya. I got to a stage where I was just heavily confused and didn't know where to go, so I had to resolve the issue by going into Zbrush and sculpting ahead

in there, then later bringing it back into Maya and retopologizing it with a lower face count.

Another challenging aspect I faced was attaching the head to the body. I had to individually extrude every face around the next and stitch it to the dragon head. Next time, I will import the whole of the dragon's (or whichever creature's) body into Zbrush and build the head up from there if I am struggling to model it. This will save me a lot of

time having to attach body parts and also make the process a lot quicker in general, as I discovered it is easier to create organic shapes in Zbrush than it is in Maya.

Feedback from peers?

“The dragon is amazing. The detail from the scales is very impressive because of how they flow with the mesh. The use of gradients to blend the colours is aesthetically pleasing. I Love the details on the face and the protrusions along the spine and the top of the head.
The joints between the dragon’s body and the legs look like two separate pieces instead of one uniform shape.” - James Gorman

What did I learn from this feedback?

I learnt from this feedback that when I create a model, I need to work harder and think more critically to make my model look like it is all one creature, rather than separate pieces combined. The legs were a shape I struggled with, which is why they may not blend well. I also can see when looking at the low poly that the legs do stick out and don't blend into the model, which is something I would edit in the future to ensure the different sections don't end abruptly.

I also learnt that I textured the dragon well, as my peer loved the design of the scales and other attributes. I applied the textures well and baked them perfectly so I am happy this came across in my peer review.

What have I learnt about planning?

I didn’t plan too well this term, as I left one project on the sidelines whilst completing two others. With this specific project, however, I think my time scale from my research to the low poly, to the high poly and to texturing all had a very good amount of time spent on each section and I was happy with the time I had left after finishing. Next time however in future projects I may try and finish my research a little sooner so I could have more time sculpting the high poly model.

What would I do differently next time?

Next time when my low poly model is completed in Maya, if I need the model to blend better together I will import it into Zbrush to fix any issues right out of the gate and export it back into Maya to UV the model and fix it any topology. Next time I would also like to use Zbrush more as I didn’t use it a lot this term and I now feel as though I am a lot more confident with Maya and Substance Painter and not so much Zbrush. The tools still confuse me however every time I use the software I do learn a bit more each time.

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