

PLANNING + REFERENCES



Sketch development of my character, starting with a simple silhouette with a focus on shapes and clean design.

A brief 200 word description, in the development of his character:

Byrne is the assistant of a boisterous grand magician, who aids the main character in discovering new magical items and weapons to aid in their quest.

However while the elderly wizard is more than happy to help, Byrne appears to act upon an obligation instead of a need for heroics.

Byrne tends to keep to himself, taking a long period to warm up to new people. The older wizard teaching him is the closest he has to family, and therefore is fiercely loyal to them.

Byrne is a dog/wolf hybrid, who walks on his hind legs. He's human sized, and of average height.

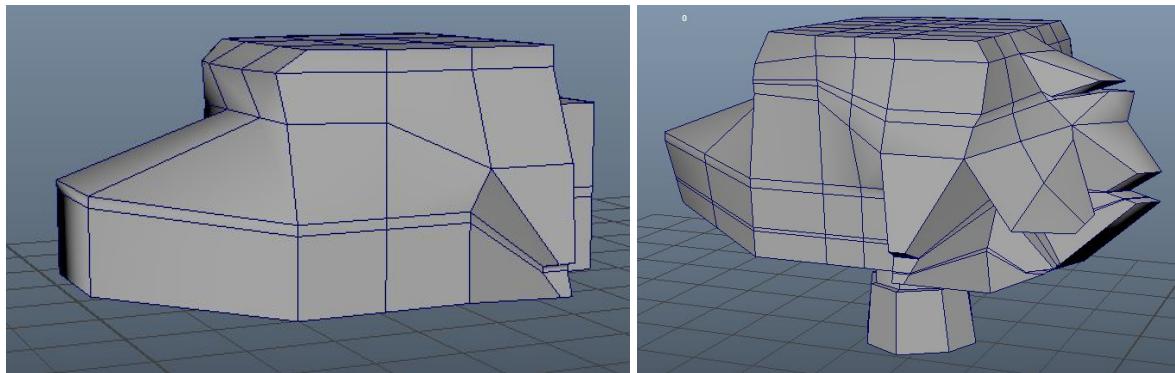
Byrne belongs to a fantasy world, possibly one of an RPG. I imagine his home in particular as a small town of high bricks and narrow lanes, highly populated with magical individuals, though he and his magician live in an isolated, aged tower.

Byrne is a rather aloof and solemn individual, especially to strangers. Thus he appears closed off both with an expressionless face, and physically, with a long cloak with a large hat. One paw is visible, holding a potion, as Byrne specialises in potion making, finding spellcasting difficult due to a lack of magical origin.



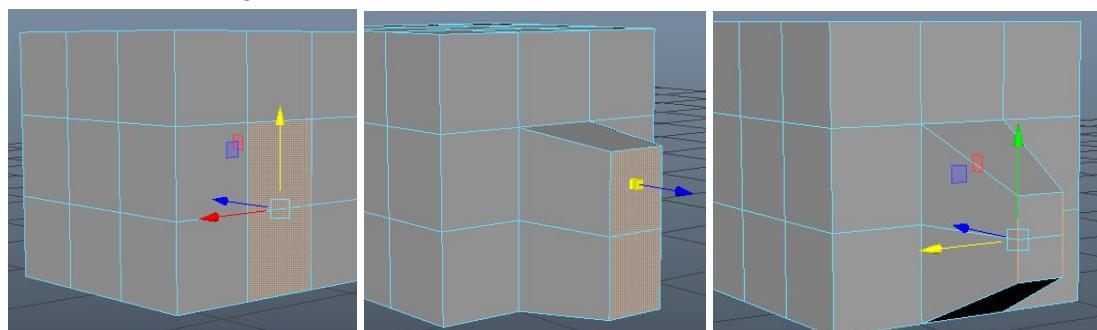
A sketch for myself to understand the dimensions and design of Byrne, from 3 angles. And, my thought process before beginning to model him, Byrne being mostly made of boxes, scaled or extruded outwards to create shape.

MODELING :



I began with a cube, with $3 \times 3 \times 3$ subdivisions. I first turned on symmetry, then selected the bottommost, middle face to pull out his snout. I then used the edges on his face to create more dimension, trying to create the side profile of his face.

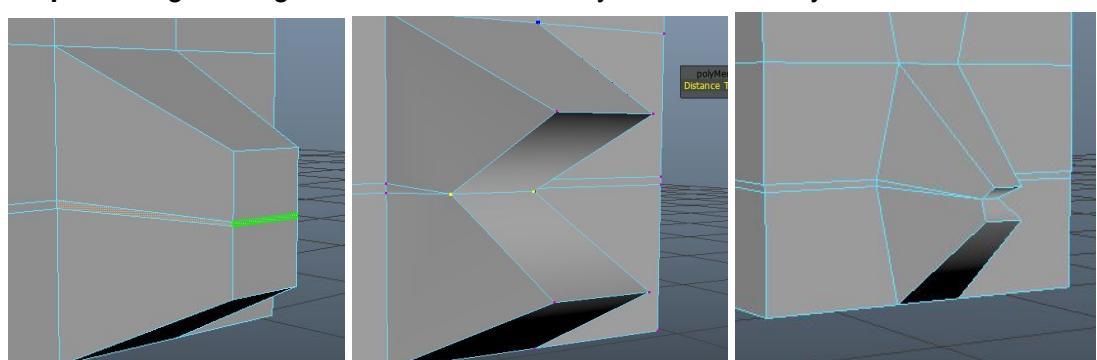
Then, I added multiple edge loops to create fur spikes at the back of his head.



Step 1. Select two faces to make a fur spike

Step 2. Extrude outwards and scale down slightly

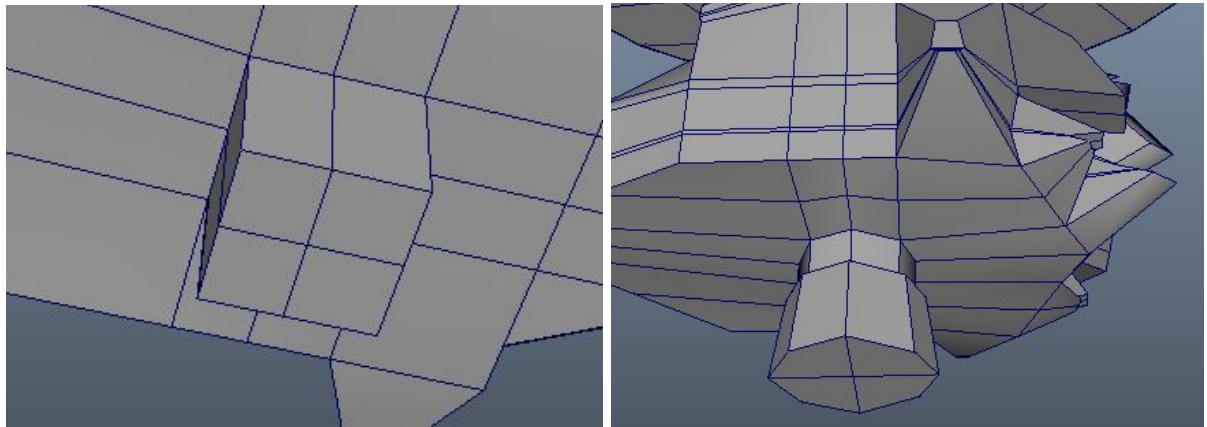
Step 3. Using the edges, Scale down vertically and horizontally



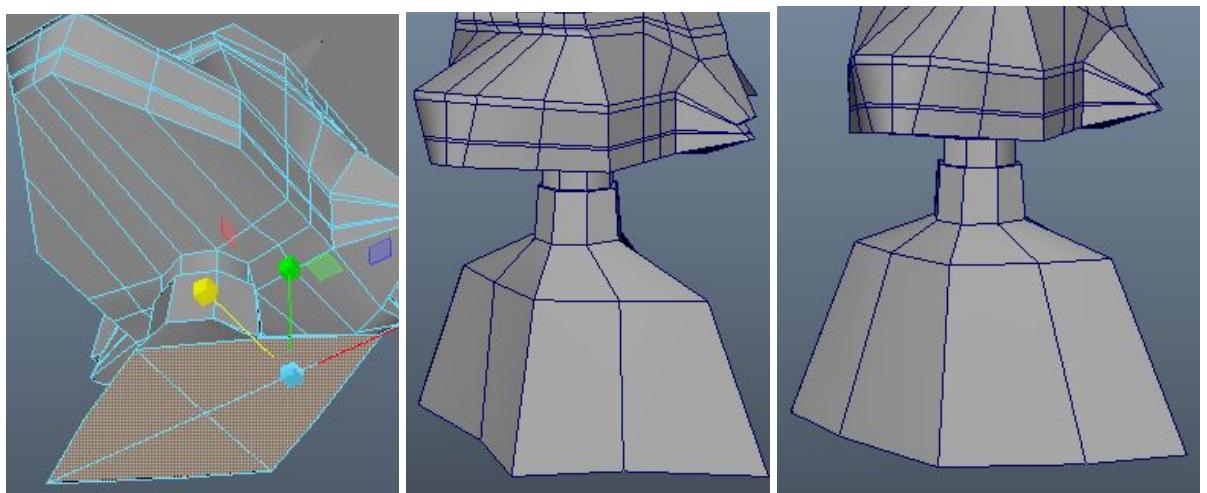
Step 4. Insert an edge loop slightly above/below the middle line. Using the face selected, use the move tool to move inwards.

Step 5. Bring the two edges close together, and merge the vertices to make a singular line.

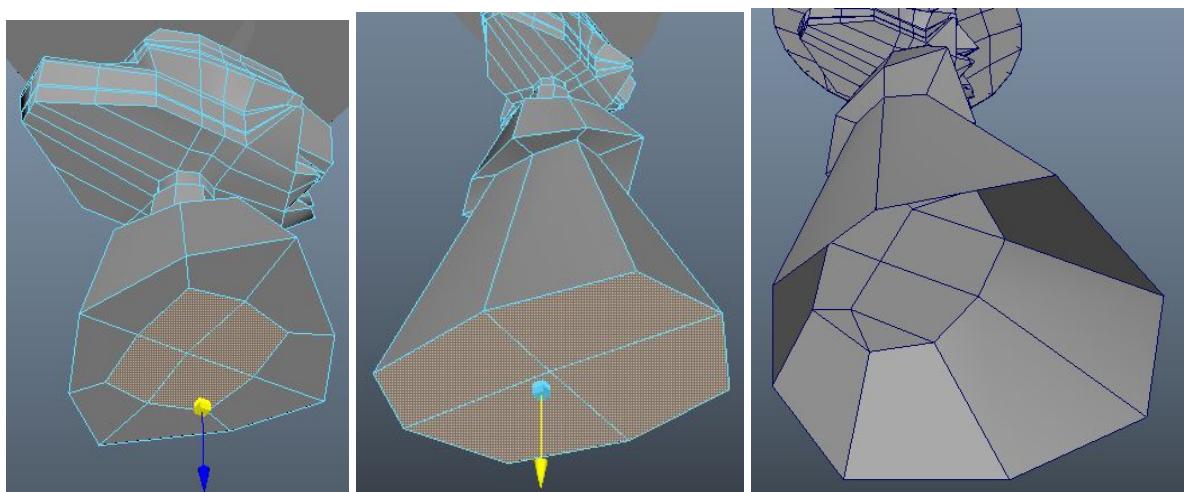
Step 6. Using the edges and vertices around the spike, use the scale and move tools until content.



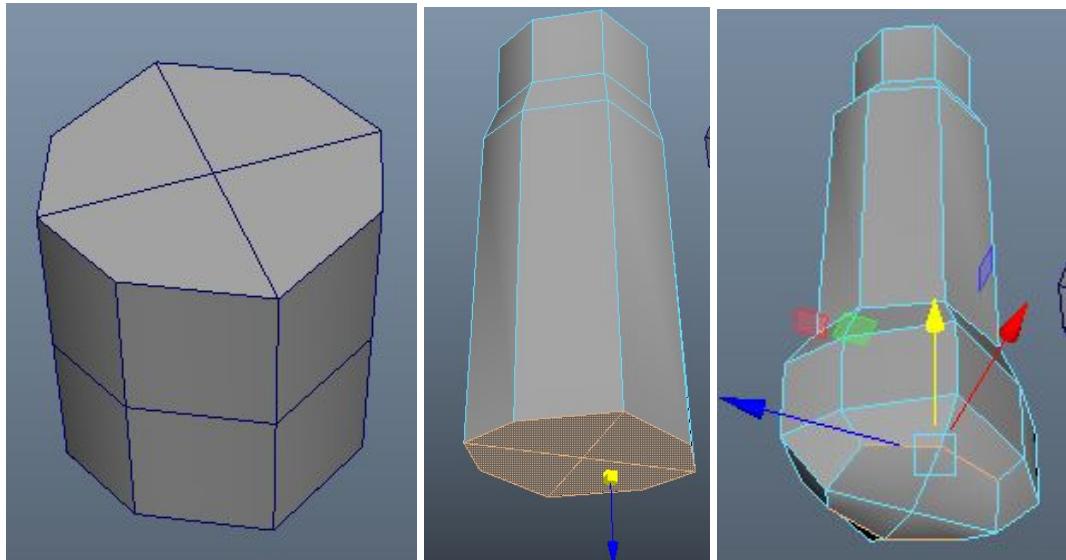
For his neck, I extruded the middle of the 3x3 grid on the bottom of his head, inserting two edge loops in the middle of the cube horizontally and vertically. I then used the corner edges to create a more rounded neck, then extruding to create his collar.



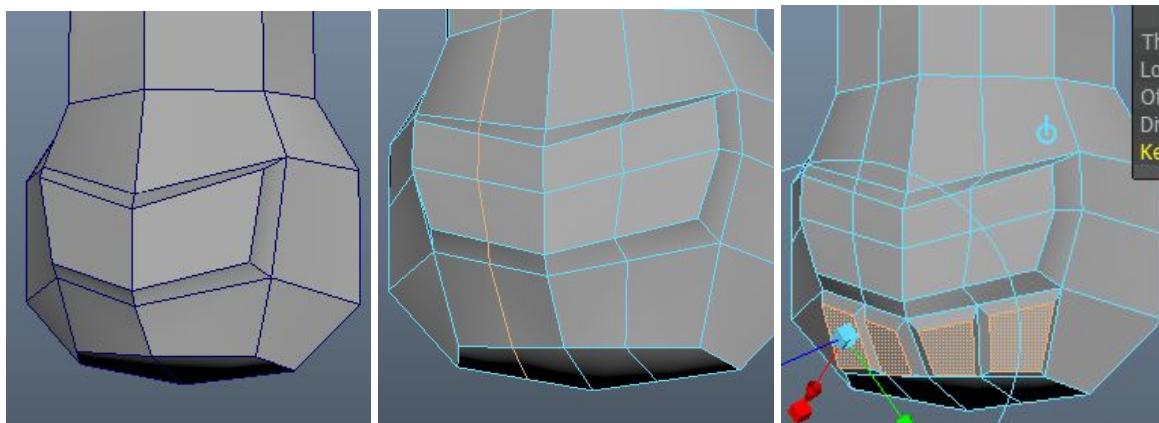
Extruding from the faces on the base of his collar, and using the scale tools, The top half of his cloak was created. Between the last two pictures, edges and vertices were rearranged to make a rounder cloak, and more 'square' shoulders.



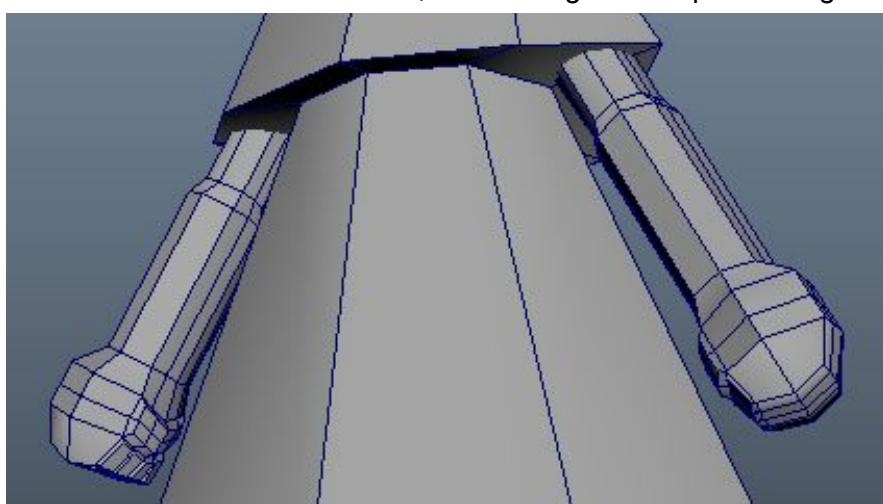
The bottom half of his cloak was created with a very similar process, except the face at the bottom was extruded inwards to remove a solid/full look when viewed from a different angle. Lastly, the cloak was reshaped to follow his design, straight and the front and flared out at the back.



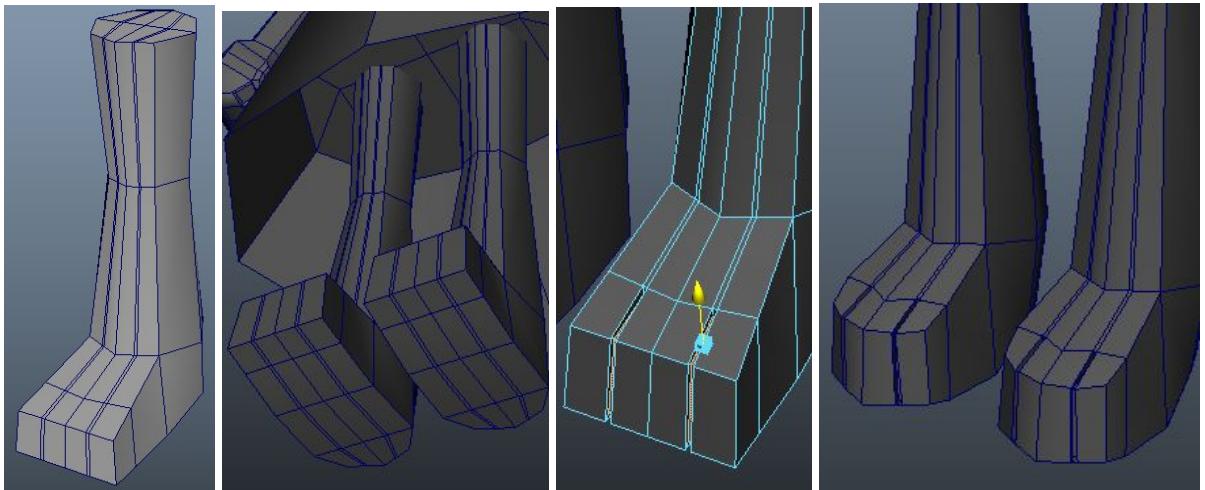
The arm began as a cube with subdivisions $2 \times 2 \times 2$, then using edges to round its shape. I used the extrude tool, and move and scale tool to pull out the bottom faces to create his forearm, then repeated this process but to create a paw.



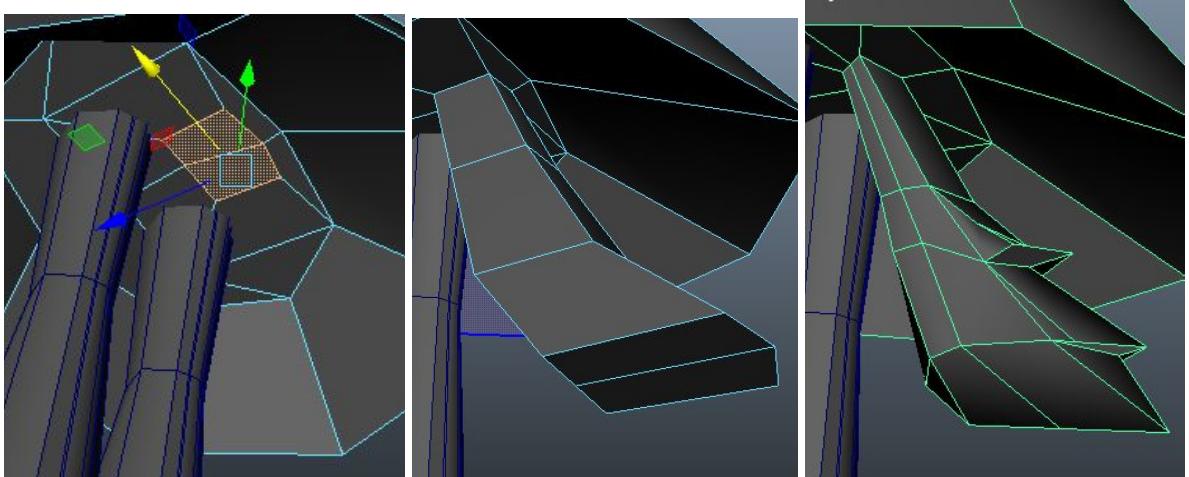
Turning off symmetry, i selected the two middle faces of his paw and extruded inwards, reshaping using edges and vertices to try and create the inside of a paw. I inserted 3 edge loops to create a smoother shape, and to create the four pads of an animal paw. These pads were made with the extrude tool, and turning the 'keep faces together' setting to off.



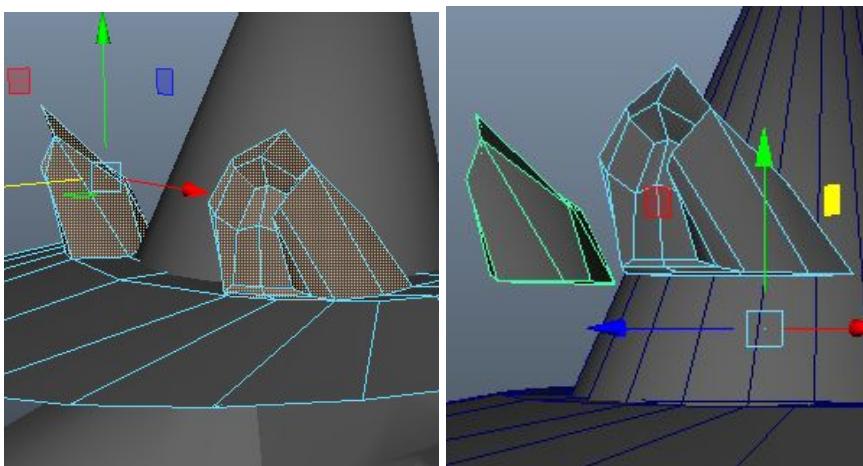
I then duplicated, flipped, and rotated the second arm to try and match the first.



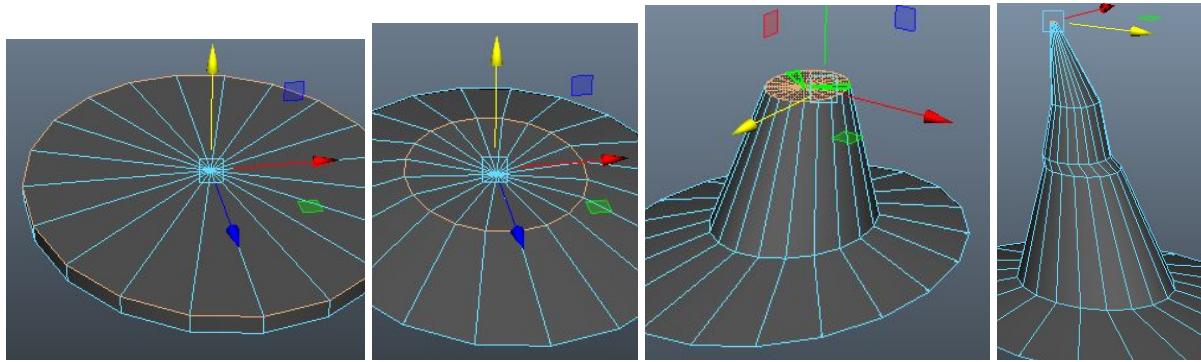
For the legs, it followed a similar process as the arms, except with the bottom extruded as a foot. It was then duplicated, and placed under the cloak. Inserting edge loops, I selected two lines of faces and extruded inwards to create his paw toes. Lastly i just reshaped the paws to be more circular and less boxy.



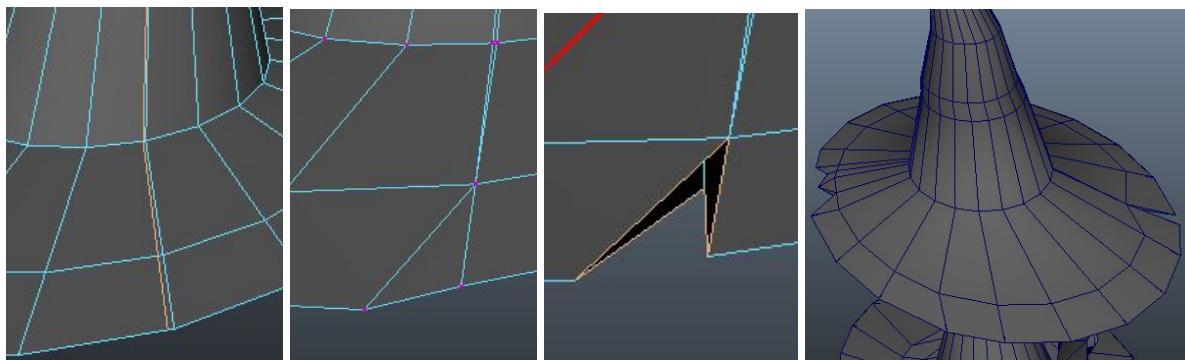
Extruding two faces underneath the cloak, I extruded outwards from the base of the tail, creating firstly a general shape, before using edges and vertices, and the same fur spike method used on the head to create some spikes on his tail.



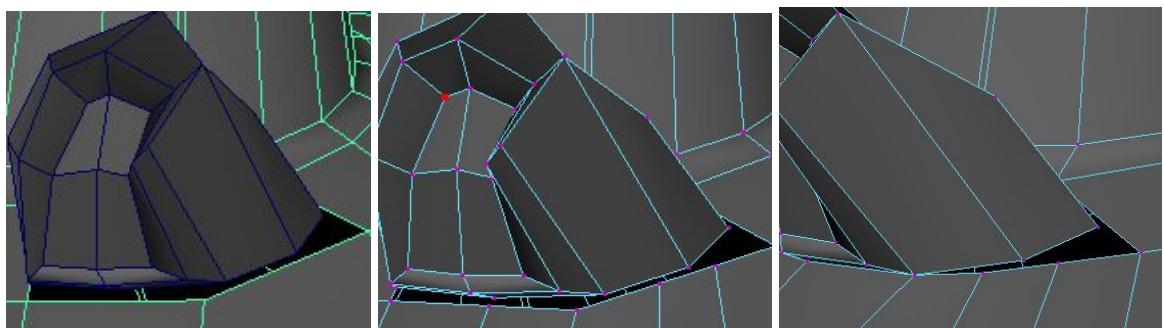
After receiving feedback to remake the hat, I first used the detach tool to preserve the ears.



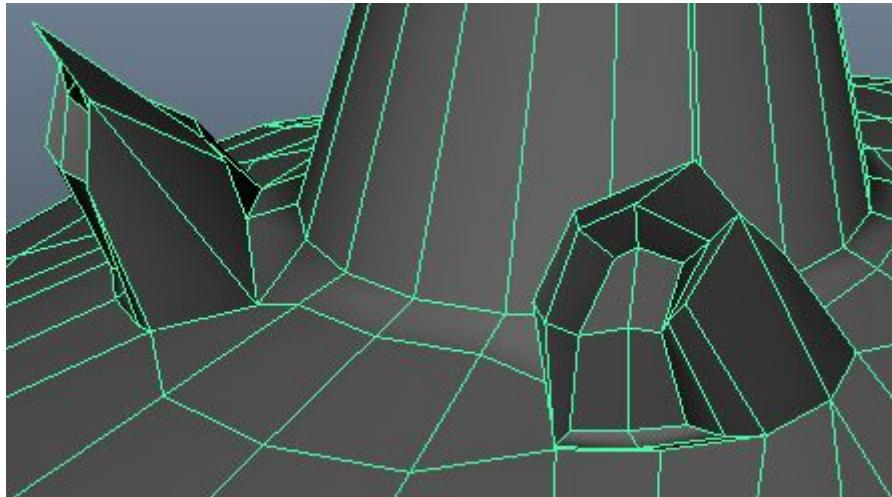
I began with a flattened cylinder, scaling the top edges to create a base, thus making the bottom edges the brim. I used the faces within the top edges to create a crooked witch's hat, stopping, and extruding again at every bend. Finally, the top was scaled way down to appear as a point.



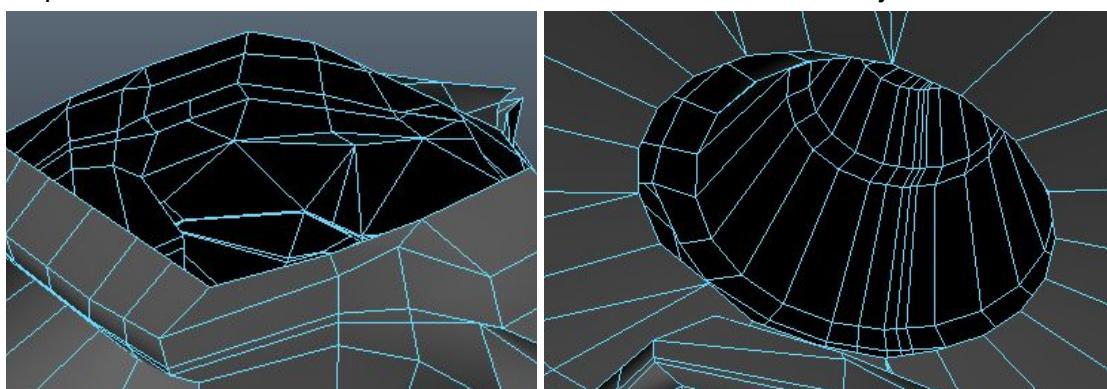
To add some tears into his hat, I first added another edge loop, moving vertices to create a 'rip'. Selecting the faces of the tear, I deleted them, then used the 'fill hole' function to create a few tears in his hat. Then, I repeated this on another area of the brim, creating a 'double tear', using more edge loops to shape it.



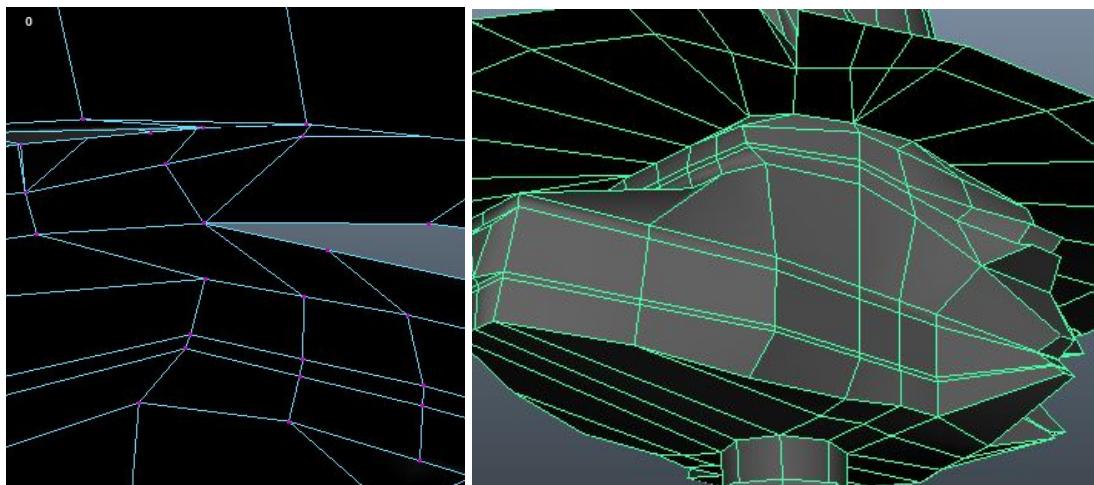
As the ears and hat are separate objects, I needed to stitch the two together. I firstly reshaped the two faces beneath the ears, to match the ears as closely as possible. I then added in edge loops to match the number of vertices at the base of the ears. Combining the objects, I then used the Target Weld tool, to stitch the vertices to each other, using the X-Ray tool to check for hidden vertices within the hat.



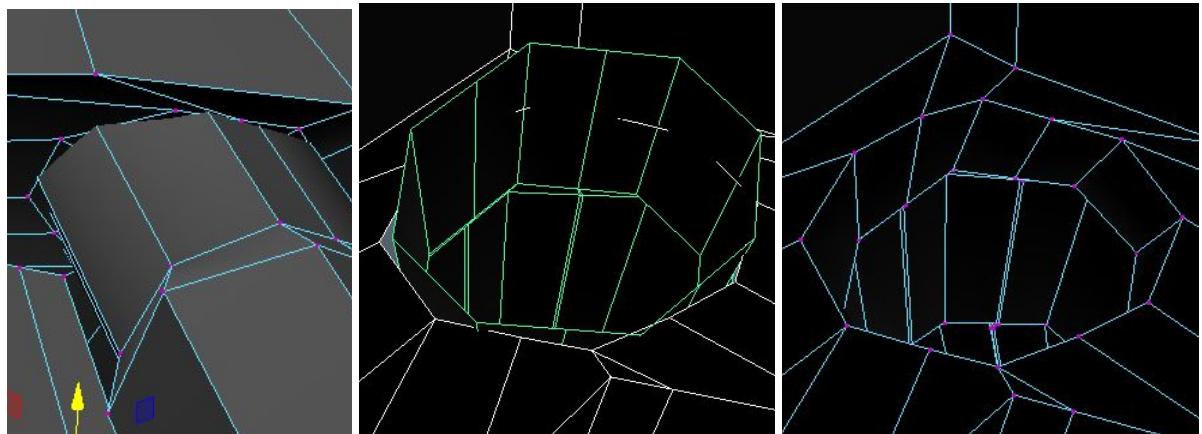
I repeated this on both sides, until the hat and the ears were one object.



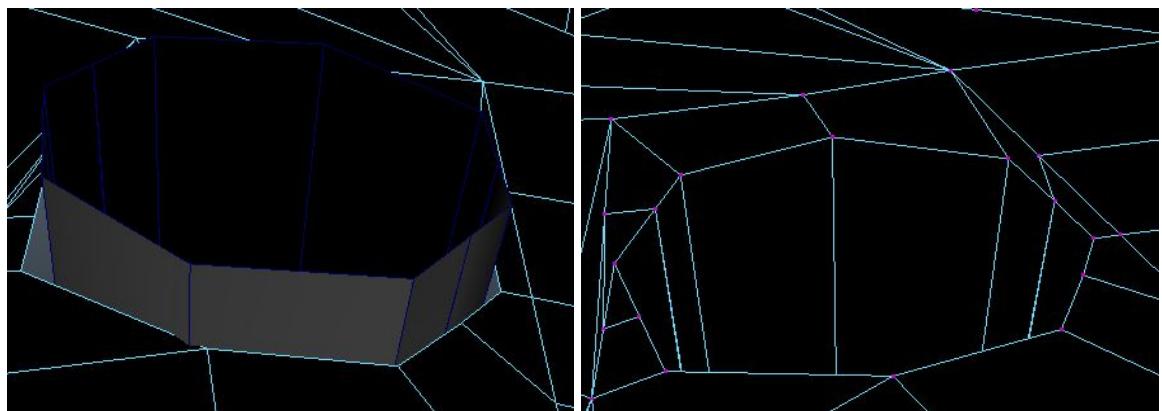
This was repeated with the hat and the top of his head, both having 20 vertices to be sewn together. The faces within the edges were then deleted, and the Target Weld tool was used.



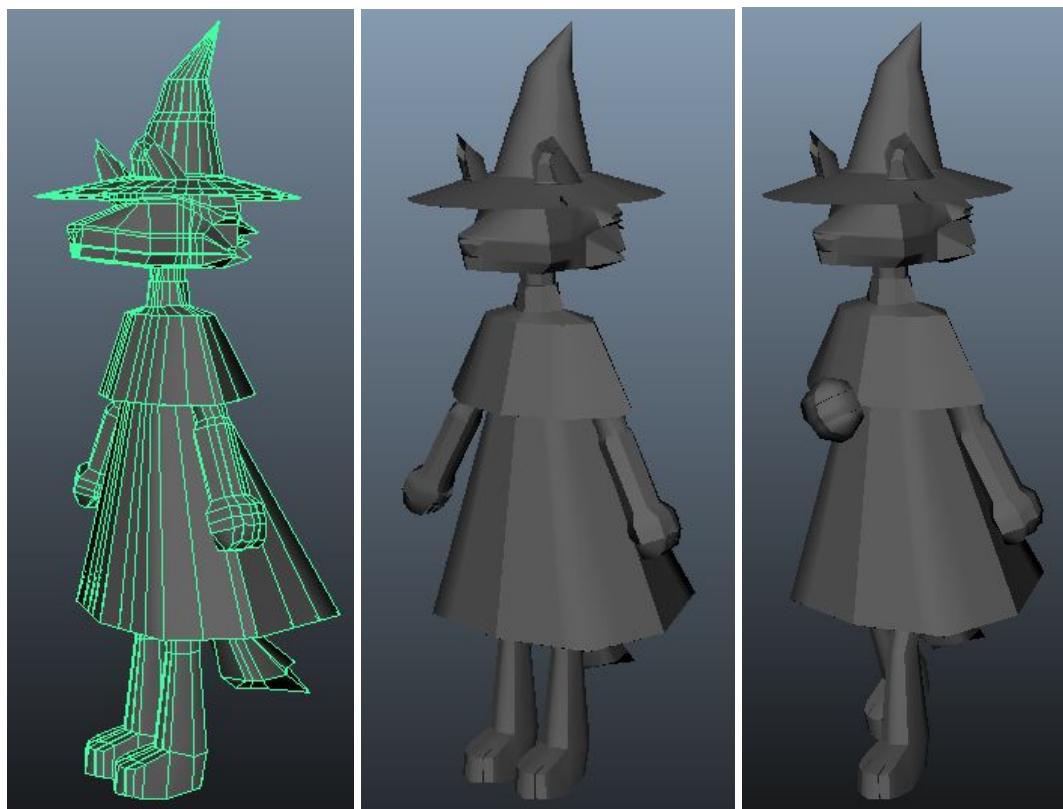
Inside the hat, all vertices were welded together, until the brim met the top of his head.



The same welding process was then done to the arms.

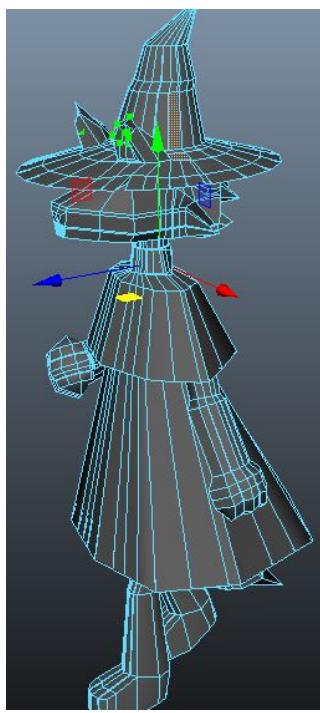


This welding process was then done on the legs.



The final model, as one object. I also experimented with posing him, bending his legs and arms for more expression.

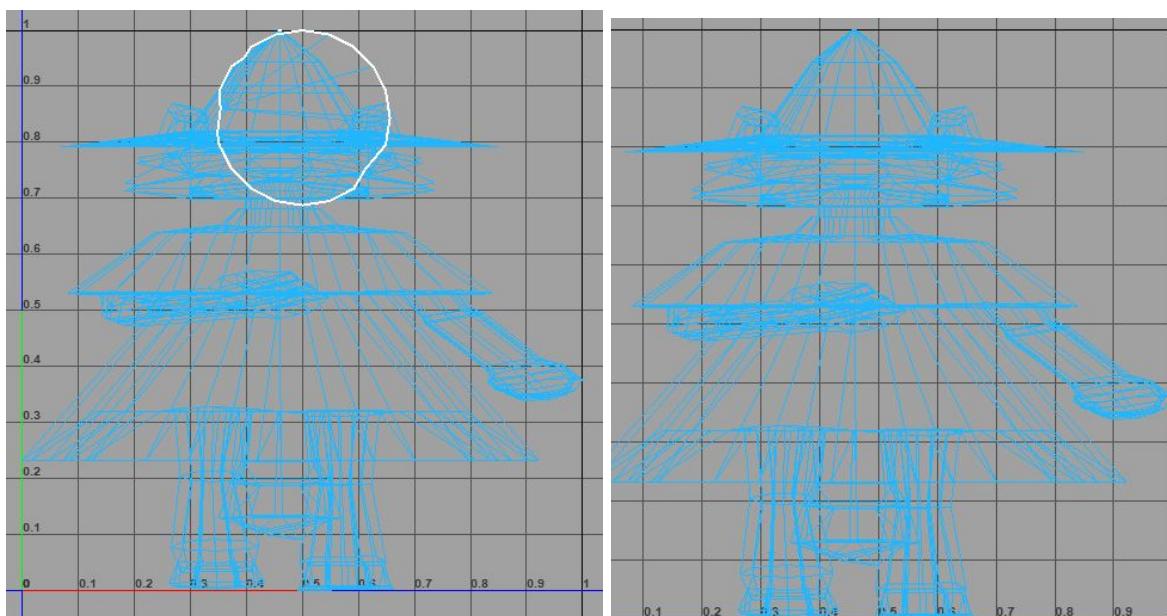
CLEAN UP :



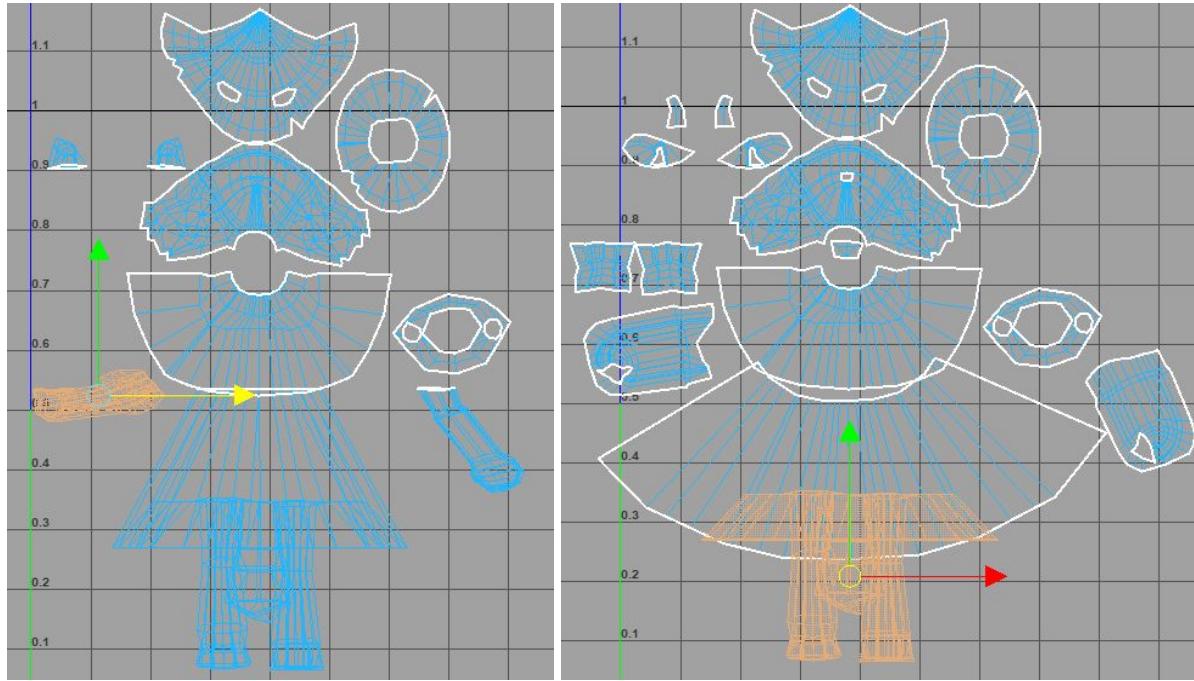
Running my model though the cleanup tool, there are a few faces with more than 4 vertices, which I fixed using the Target Weld and Multi-Cut tools.

The green vertices I found indicated an issue with the UV map, though solved themselves as the planar map was projected.

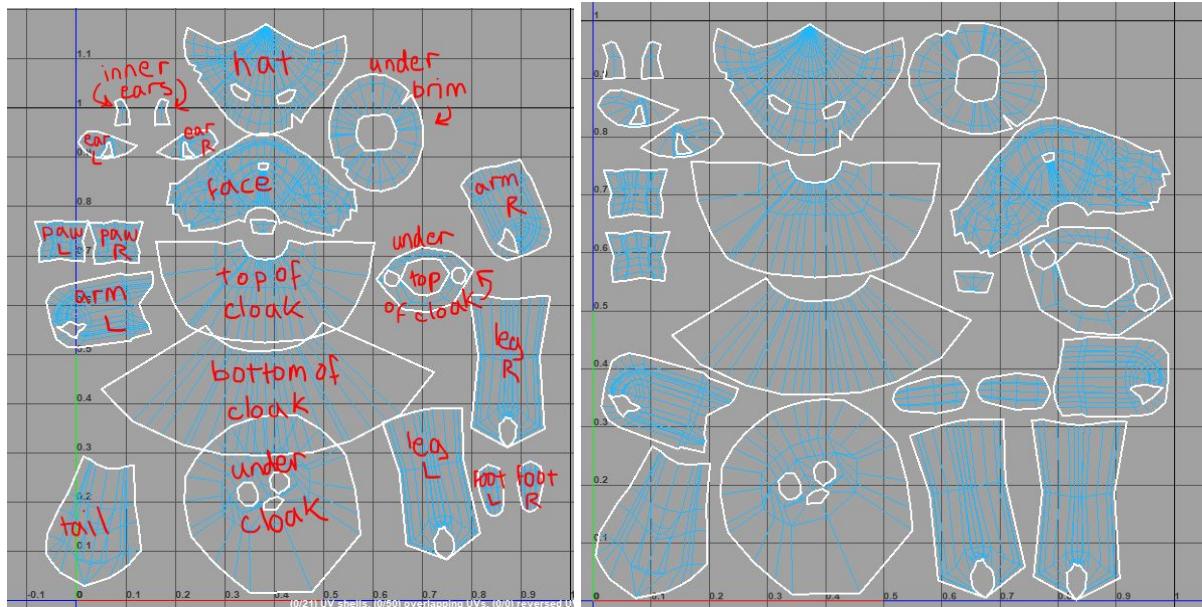
UV MAPPING :



I first used planar mapping from the Z axis. This alerted me to an issue at the 'point' of the hat (a tiny, flat face). Thus, I deleted the entire face, used the Fill Hole tool, and the Triangulate setting to remove this error.



I used the Cut and Unfold UV tools to separate each of Byrne's elements into sections, and then cut a line in the middle of each element.



The labelled and rearranged UV map. I manually set the layout so I could know where everything was, and to separate the left and right sides of objects (as they aren't symmetrical, due to me posing my character early).



Before drawing on the UV map, I just toyed with main colours on a sketch. First, a more unsaturated, cool palette. Then, a highly saturated, slightly more warm one. The third one was a mix of the two, which I settled on.

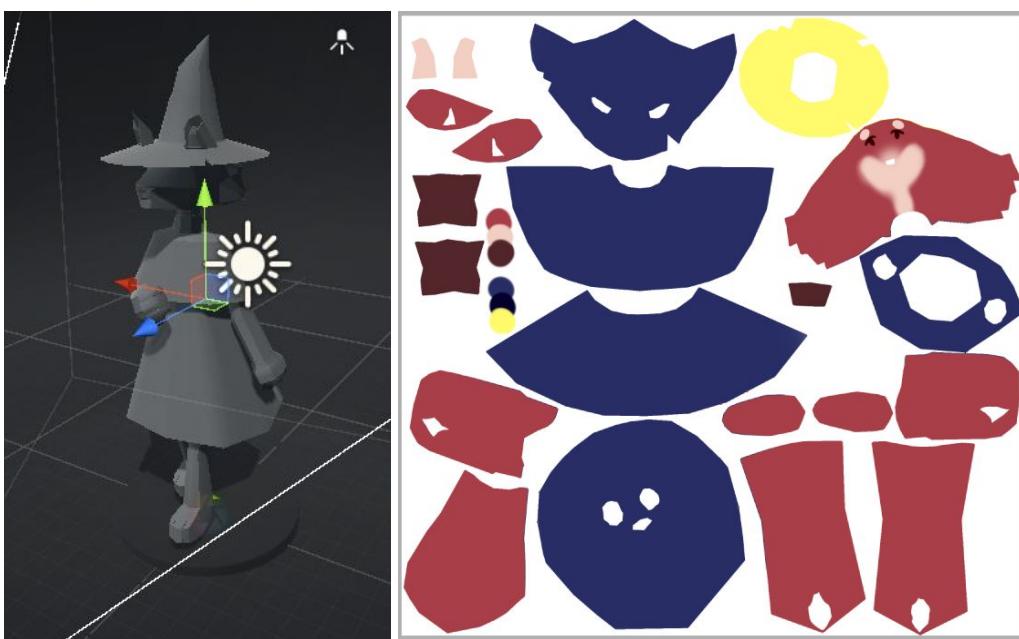


The final design of Byrne, with his UV map. Using the fur patterns of wolves as reference, I attempted to give his fur some patterning and variation, using three main colours. The cloak was inspired by a night's sky, with some buttons at the front, and stitching along his backbone. I used a 'rune' pattern along the bottom of his cloak and top of his hat, and lastly, added a glowing brim beneath his hat for an interesting light source.

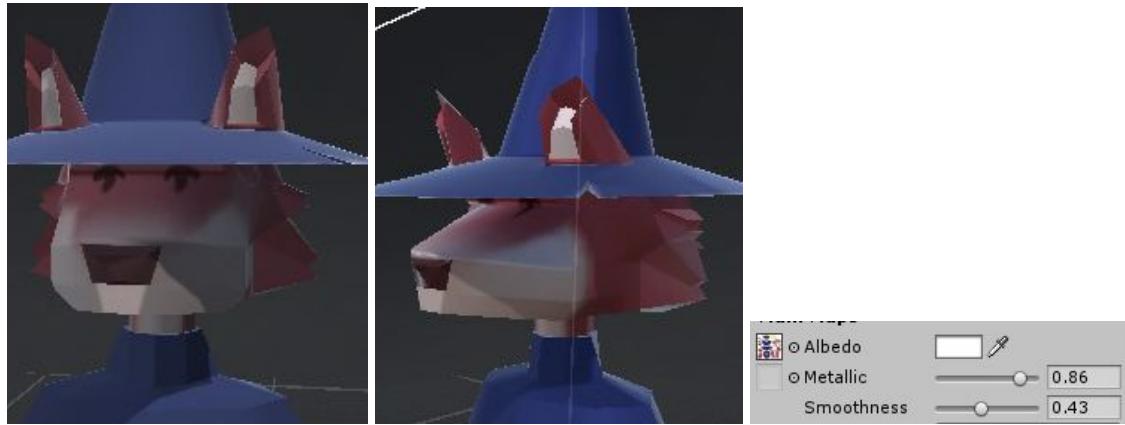


Applying main colours in Maya, to get a really basic idea of how the colours worked together in a 3D space.

UNITY + TEXTURES:



I began with a plain model, applying detail to his UV map, and tweaking the image already in the 'Textures' folder of Unity.



The placement of his eyes were rather difficult as they were flat. For his fur patterning, I used an airbrush tool as I found solid colours didn't work with the 3D elements of his face. Additionally, I found that a very high metallic setting made the colours appear a lot more saturated, used with a medium smoothness setting.



As the face was rather tricky, I decided to move on to his clothes, starting with a line running down the centre of his cloak, and harder shading around areas that should cast shadows.



Trying to implement the gradual pattern at the bottom and top of his outfit. I found that the cloak worked well, but the hat's pattern is a bit too high.



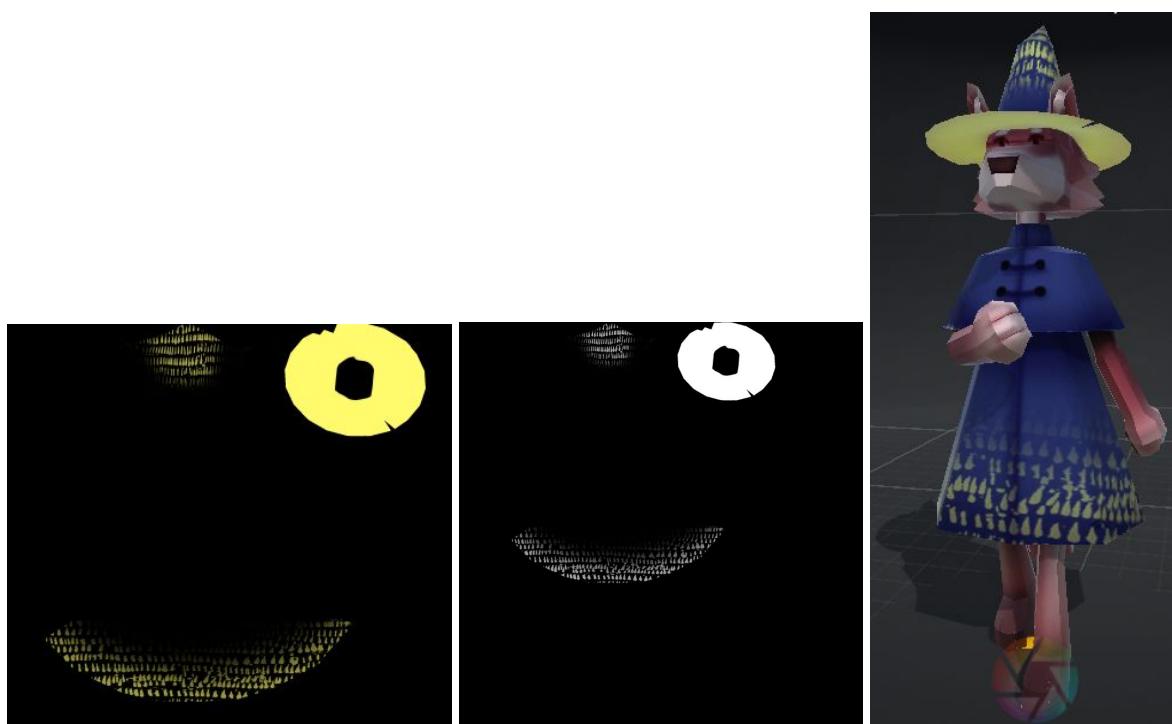
Fixing the lack of pattern on the hat, and shading the arms, and ears. I followed my design in the fur patterns, but added a gradual fade to black closer to the connection between the arm and the cloak, to appear more natural.



Finished the fur patterns on the legs, tails, and the paws. All elements except the paws used the same 'gradient to black' style for a nicer shadow. I also decided to add pads underneath his paws for a little touch of detail. In this step I also decided to add some scratches, rips and patches in his cloak, to reduce the symmetry of his cloak, and add a 'scruffy' element to his design.



Lastly, I added some shadows for definition beneath the hat, and added shadows in his nose and paws. I also tweaked his face slightly, and the patches of his cloak.



I then isolated the yellow elements, and changed the image settings to grayscale to create an emission map. I attempted to make the yellow in his design glow a bit, though the emission turned out extremely subtle.

B U M P M A P P I N G :



The bump map for fur, and a bump map to create the leathery texture of dogs' paws and noses. I found all my bump maps through Google, and scaled them down to fit within each element of my character.

- Fur texture:
 - ◆ <http://www.psd-dude.com/tutorials/resources-images/free-fur-textures-for-photoshop/seamless-tiling-fur-texture.jpg>
- Leather texture:
 - ◆ <https://fTextures.com/textures/leather-bump-map.jpg>



Three possible bump maps for his cloak.

→ Fabric 1:

- ◆ <https://www.fabricgateway.com/images/fabricgateway/c2/c2f5743525dfd44f082985b40d28a045.jpeg>

→ Fabric 2:

- ◆ <http://dpanoply.s3.amazonaws.com/blog/conform-text-to-surface-using-displacement-map/02.jpg>

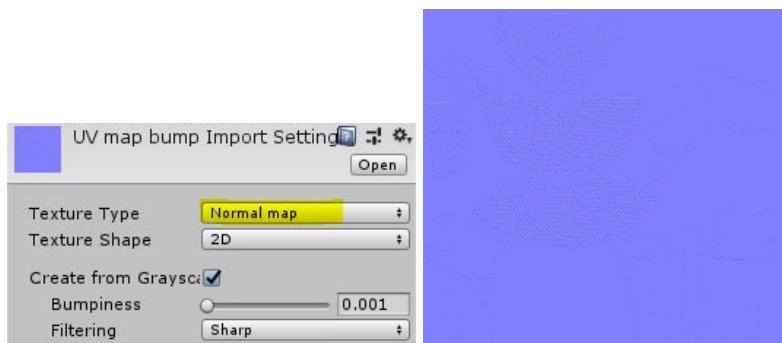
→ Fabric 3:

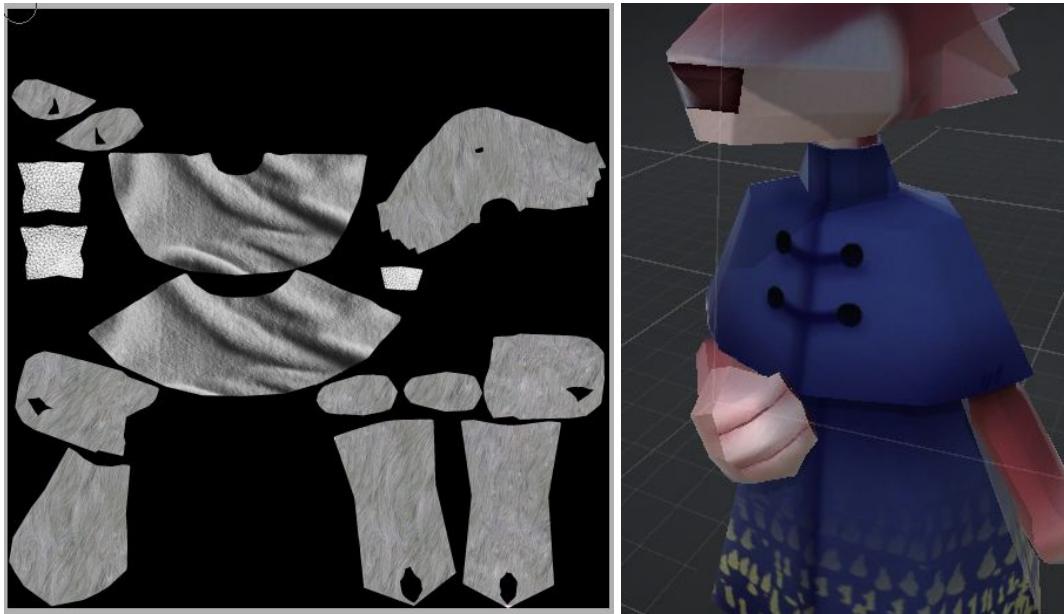
- ◆ <https://i.pinimg.com/originals/f7/1f/48/f71f4822ae148293c2e1d3c8d1e4c15d.jpg>



Experimenting with the fur bump map. Though subtle, I like the slight texture of fur.

When importing a bump map, the texture type had to be changed to a 'normal map', thus making the map appear fully purple with tiny textures.





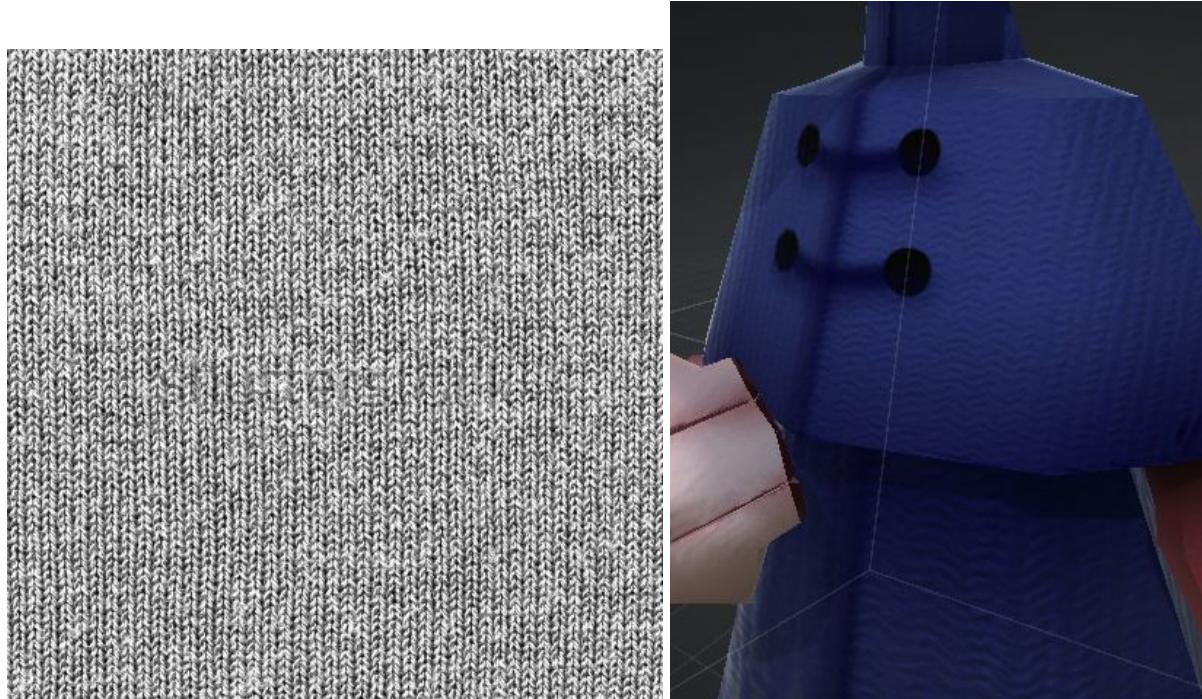
With this first fabric bump map, I find that it changes very little on the model, especially due to a very low Bumpiness setting of 0.001.



The second fabric bump map I find gives more texture, thought I'm worried it appears too leathery, and rough.



The third one I find better than the previous, though I'm not completely sold. I find that the effects of this bump map are much too subtle, being very hard to see.



As another experiment, I used this knit bump map, and I find that this works really well! It gives texture without appearing too rough/leathery, and makes his plain cloak and hat appear a bit more complex.

→ Fabric 4:

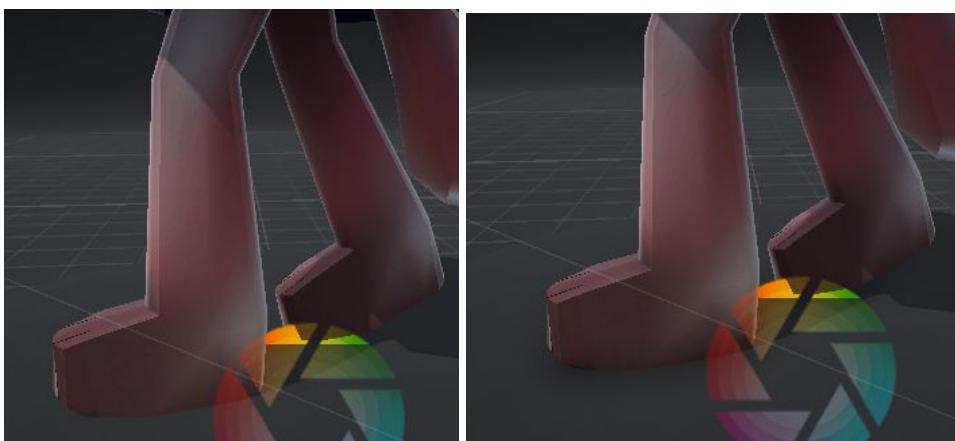
- ◆ https://image.shutterstock.com/display_pic_with_logo/888580/570263317/shutterstock-photo-gray-knitting-fabric-texture-for-background-570263317.jpg



The final bump map.



Some shots of Byrne, with his new textures.



Lastly, I added Ambient Occlusion, though kept it very low on a setting of 0.7, and tweaked the camera a bit more for a smoother viewing process.