CIT 2492-0910 Introduction to 3D Animation

3D Animation Sketchbook

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The first task was to build this Star Wars scene in 3Ds studio max. The reason why this particular scene was chosen is because the scene relates to the Star Wars theme of my animation.

Parts of the scene, which have to be built are:

The chairs

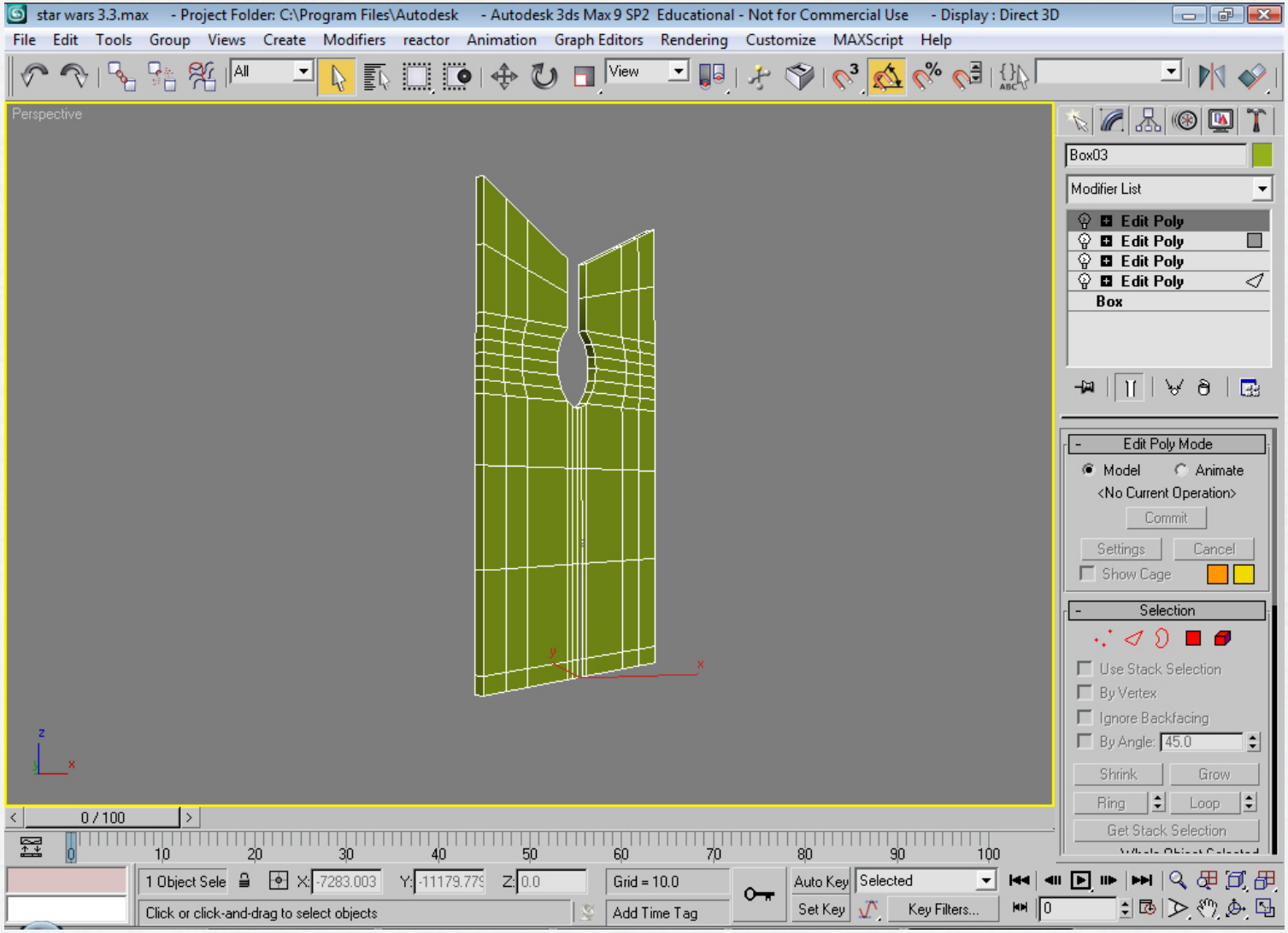
The table

The centrepiece

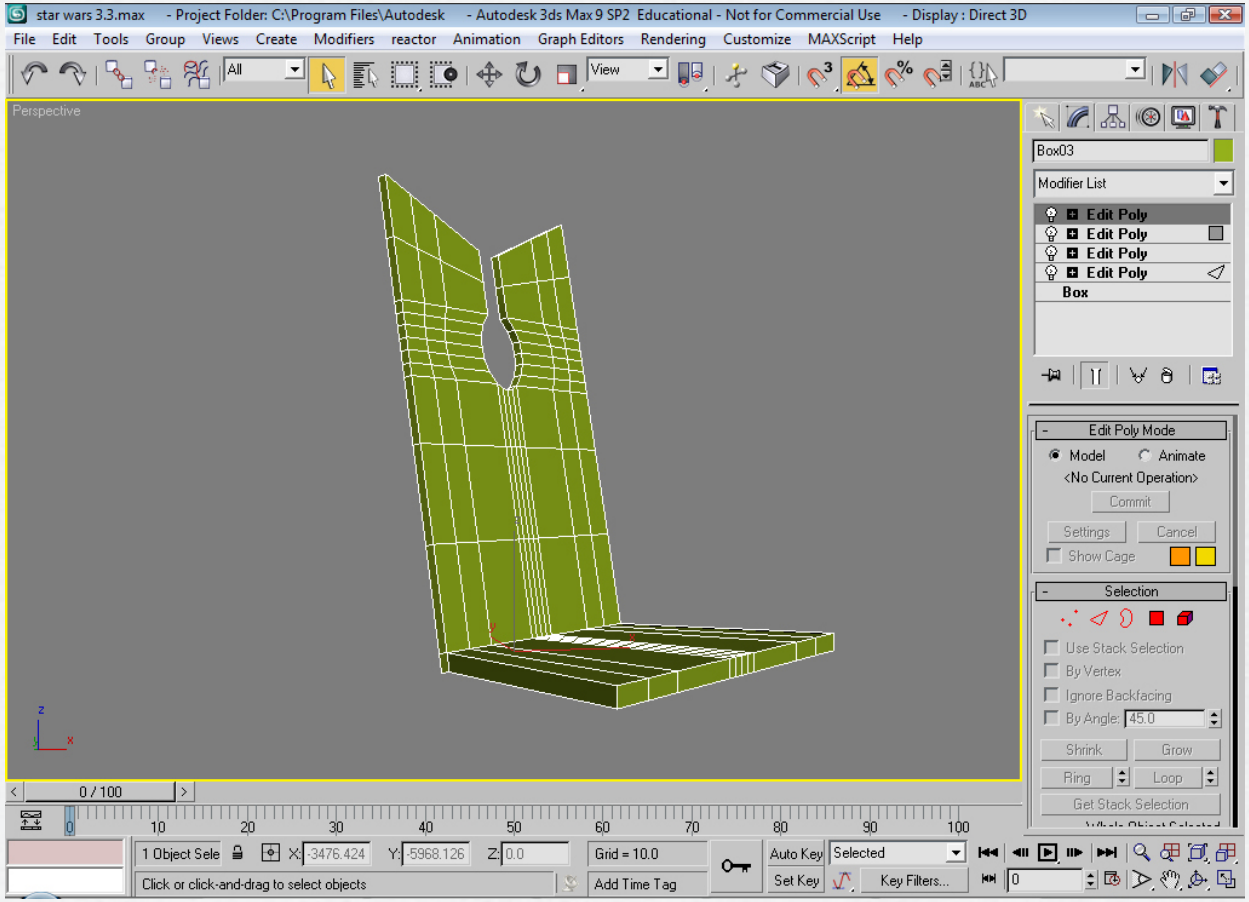
The backdrop

The Chairs

First of all I created a box object and reshaped it to look like the back of one of the Star Wars chairs.

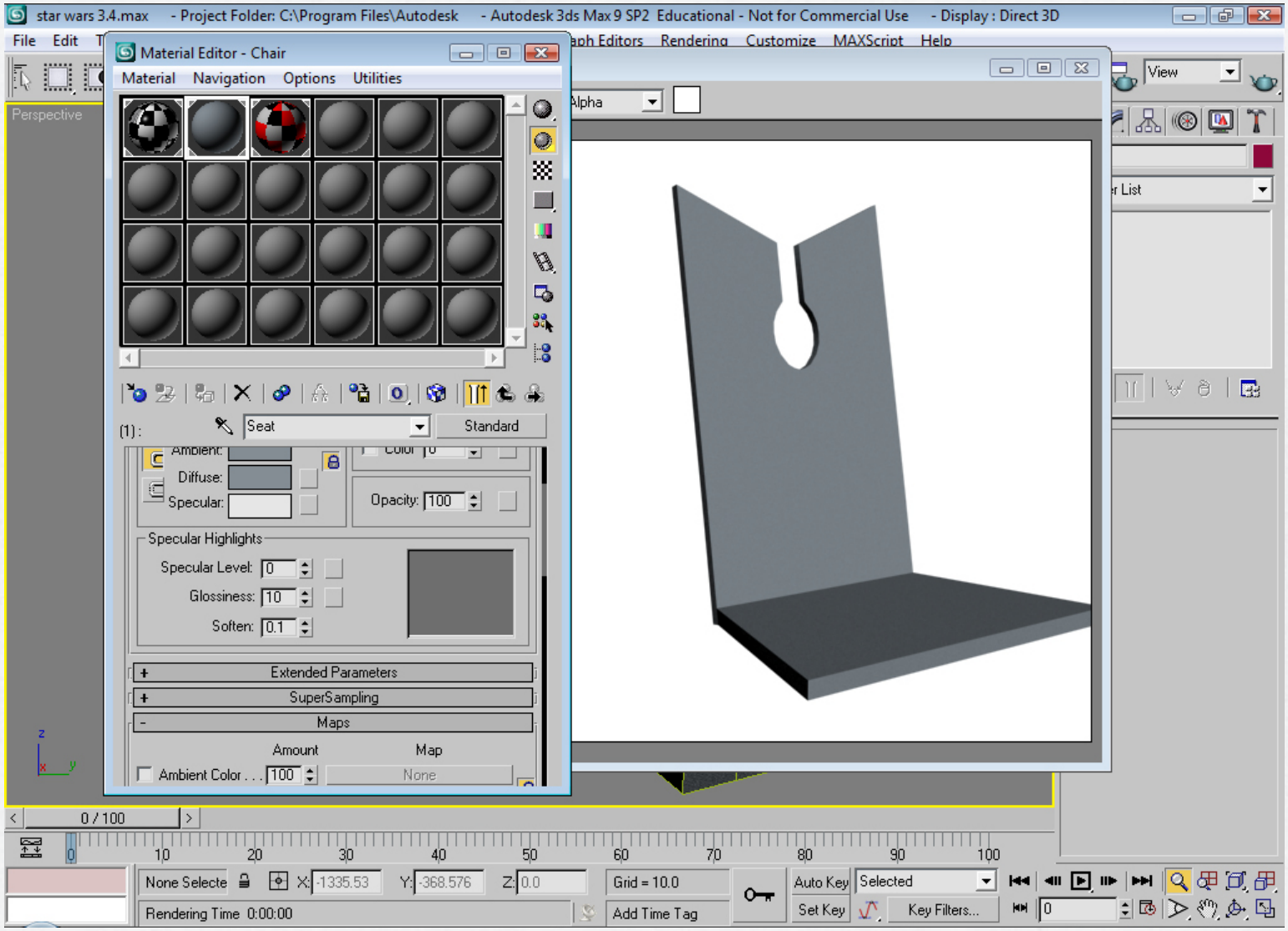


The back of the chair was then positioned at an angle and the bottom faces of the chair were then extruded to create the seat part of the chair.

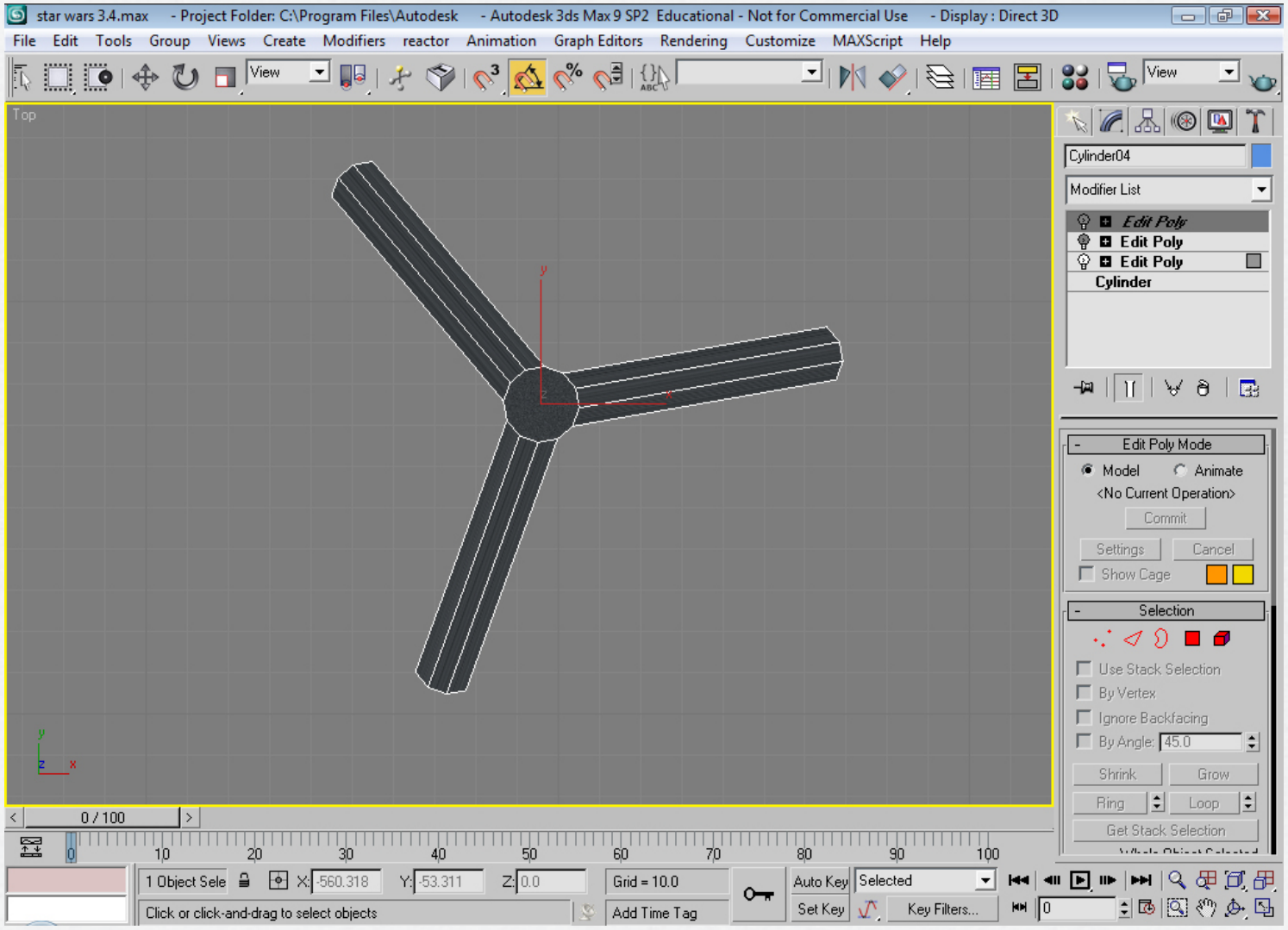


The extrude method was best used here because I could accurately judge what would look right on the chair and it would spare me the trouble of having to create a separate box object, re-shape it and attach this object using a boolean to the back of the chair.

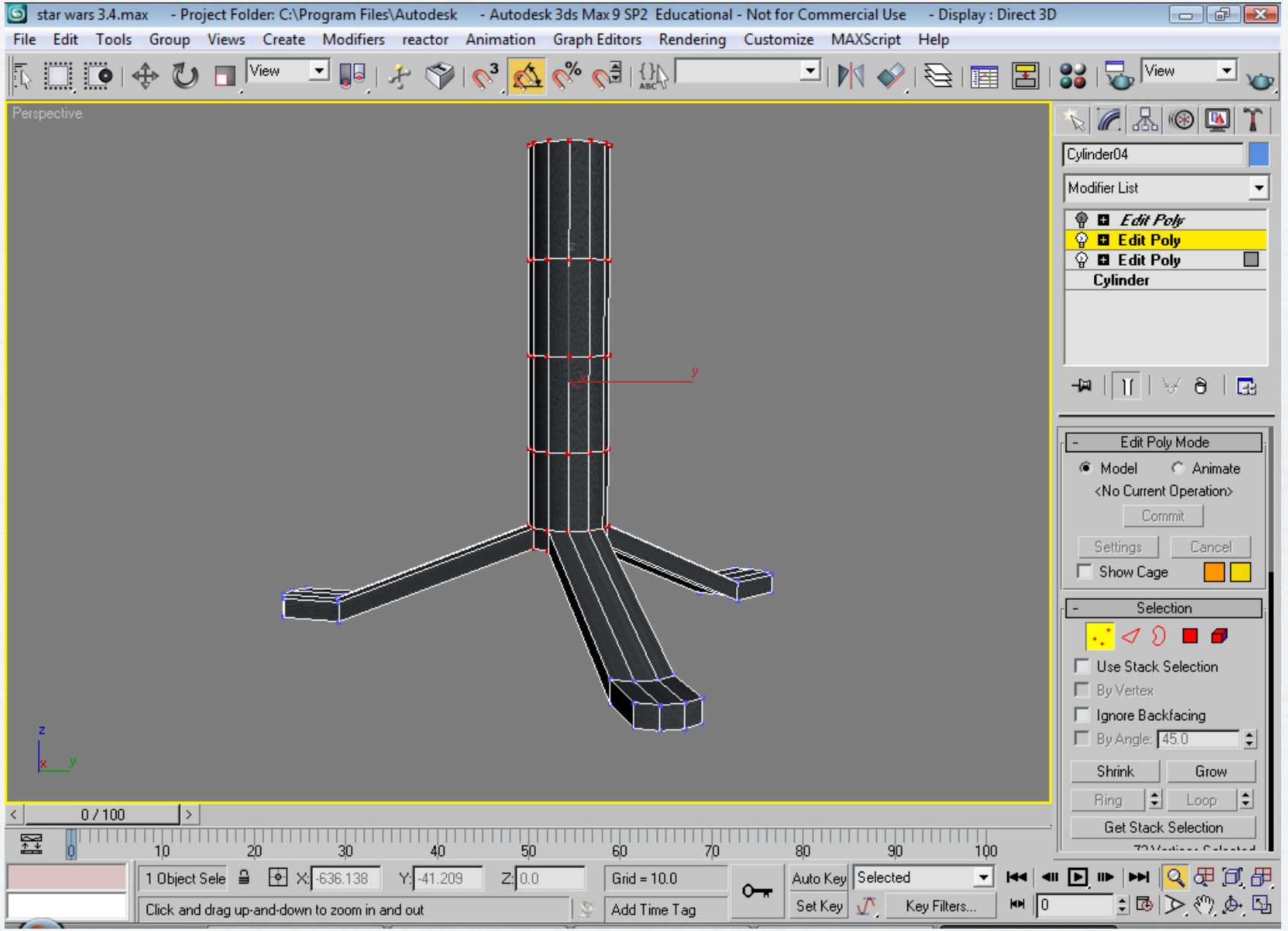
The colour, which was used to texture the chair, was just a simple grey. The chair texture was also given a bump map on it to give the chair a grain effect.



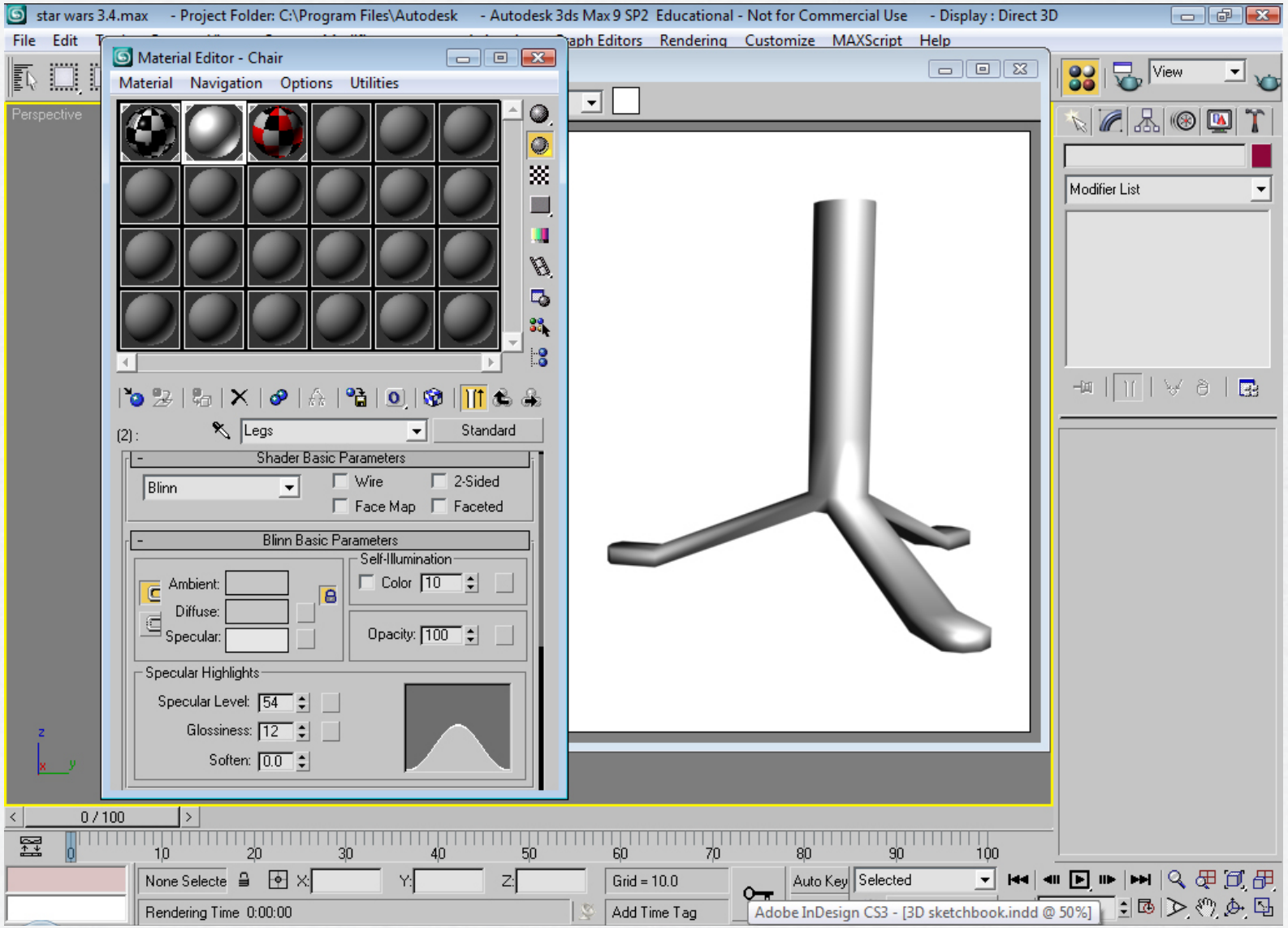
The other part of the chair to complete is the chair's legs. Using the same extrude method as the chair the relevant faces of the cylinder object were selected and then extruded to an appropriate length.



Several vertices are then selected and pushed up in order to create the chair's feet.

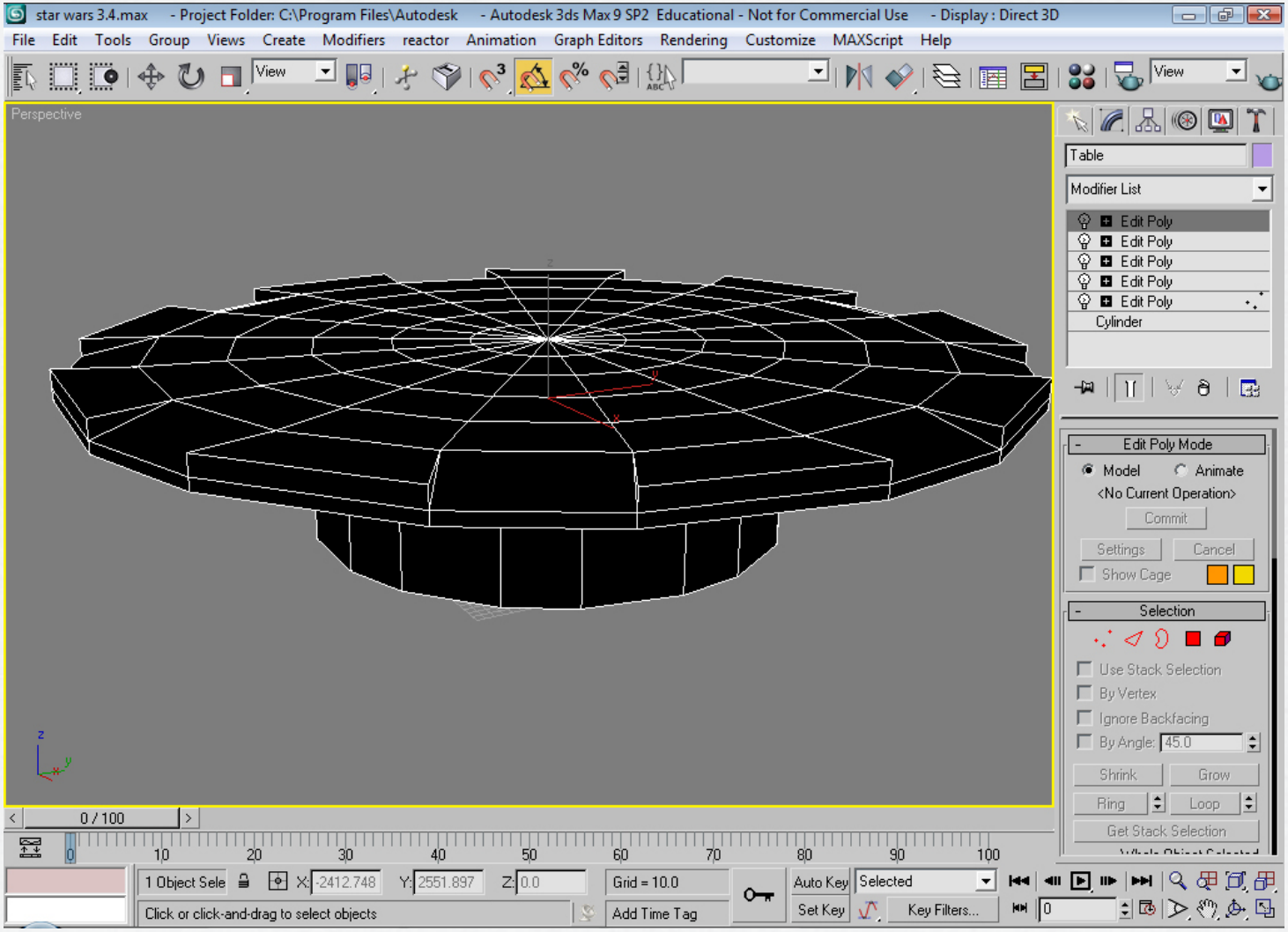


The chair's legs are coloured grey in the material editor. The specular level and the glossiness were adjusted to give off a metallic look.

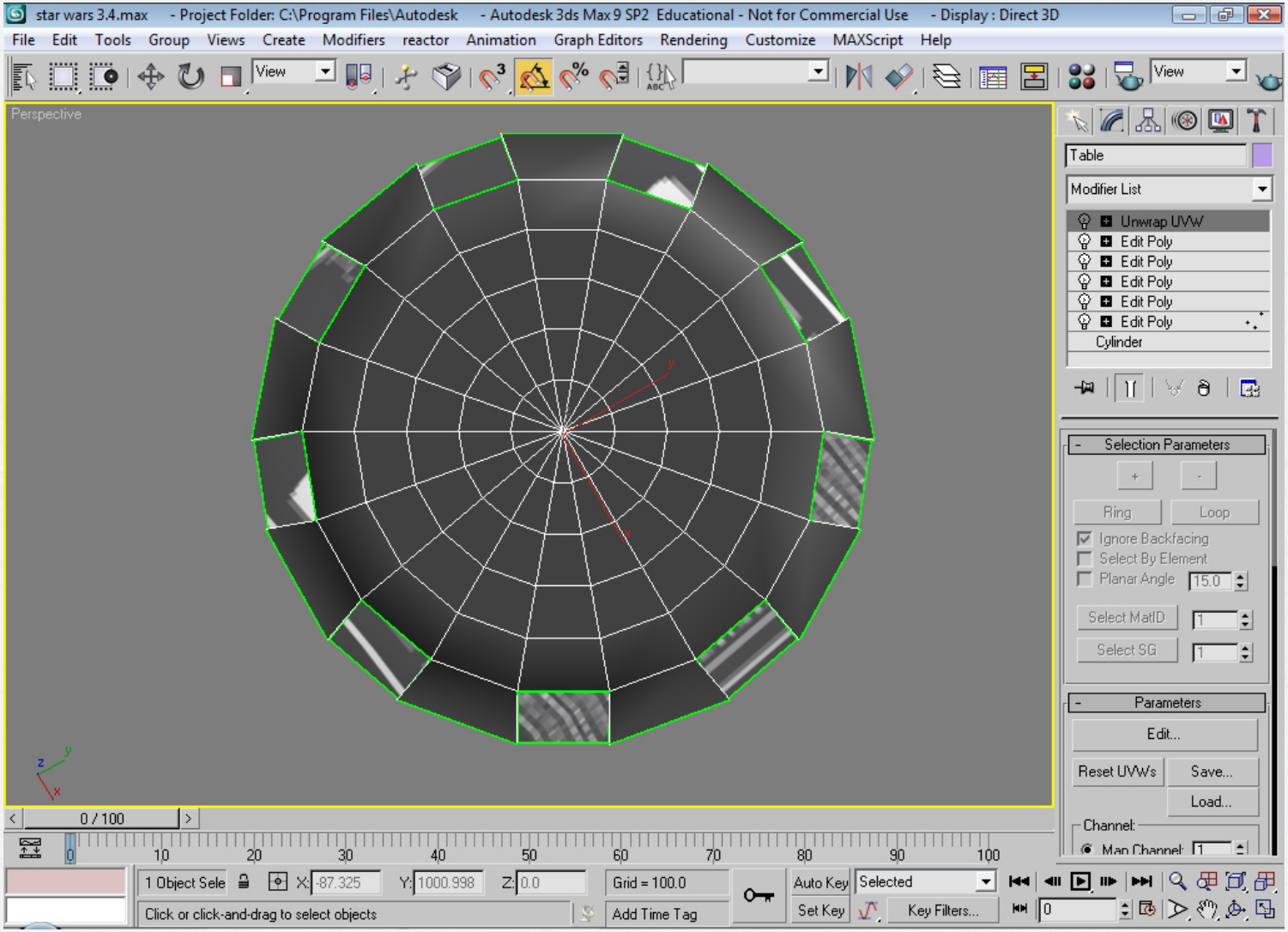


The Table

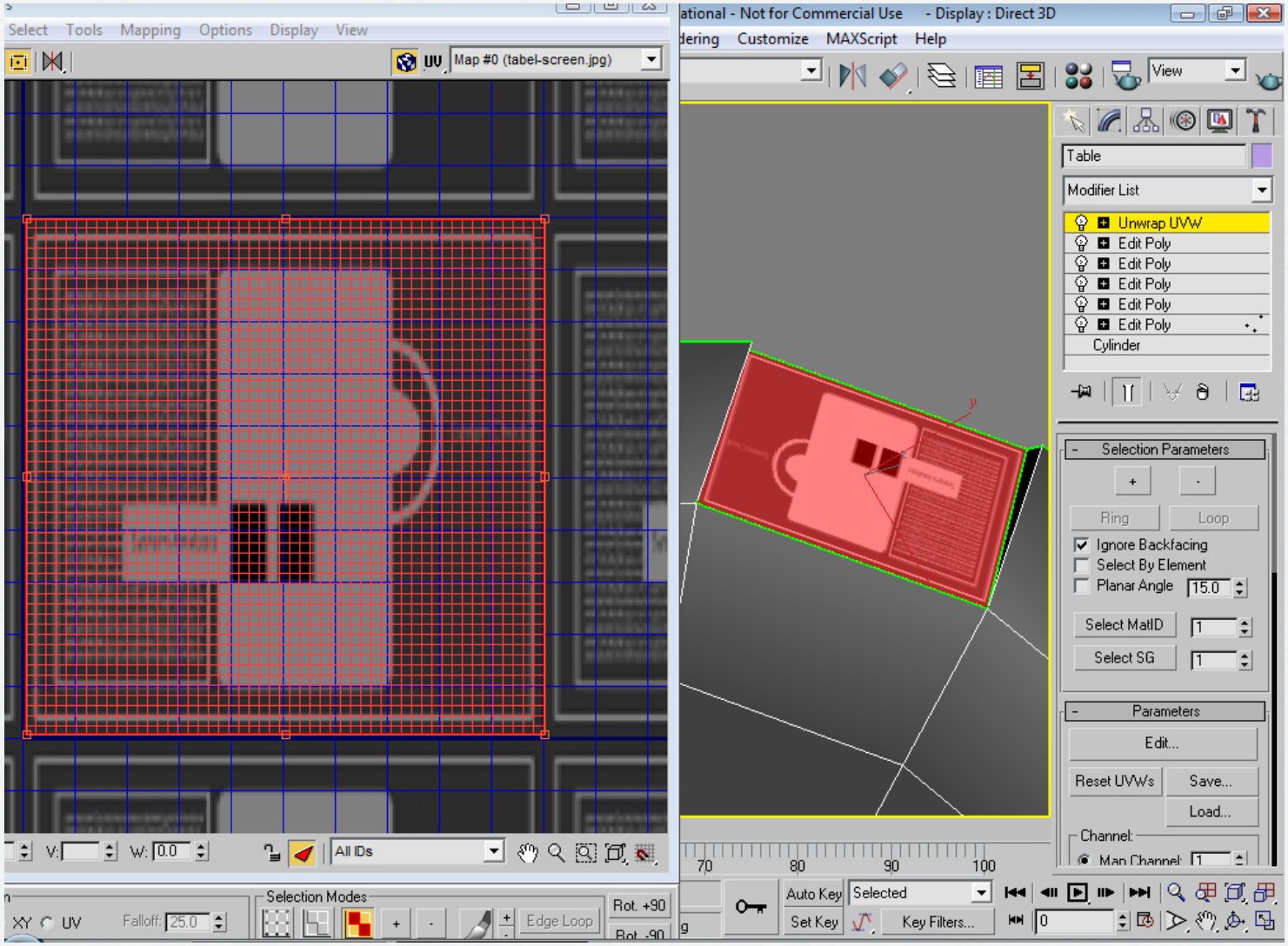
The table was shaped from a cylinder object.



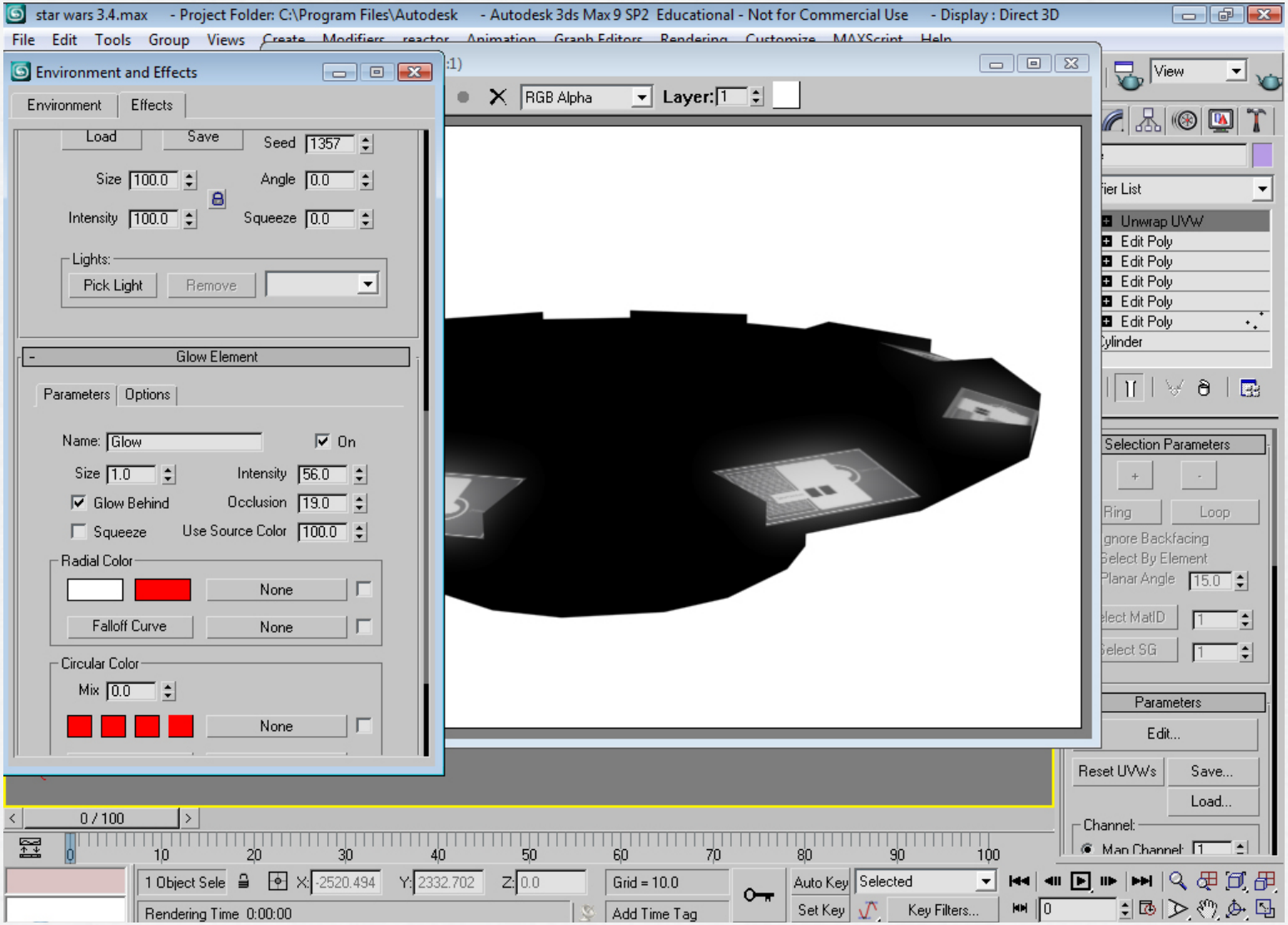
In the Star Wars movie scene the table has some form of computer screens on them. The texture was designed (below) and will be placed on the edges of the table.



As we can see the images do not fit in the space provided. Therefore a Unwrap UVW modifier is used to fit the texture in the space.

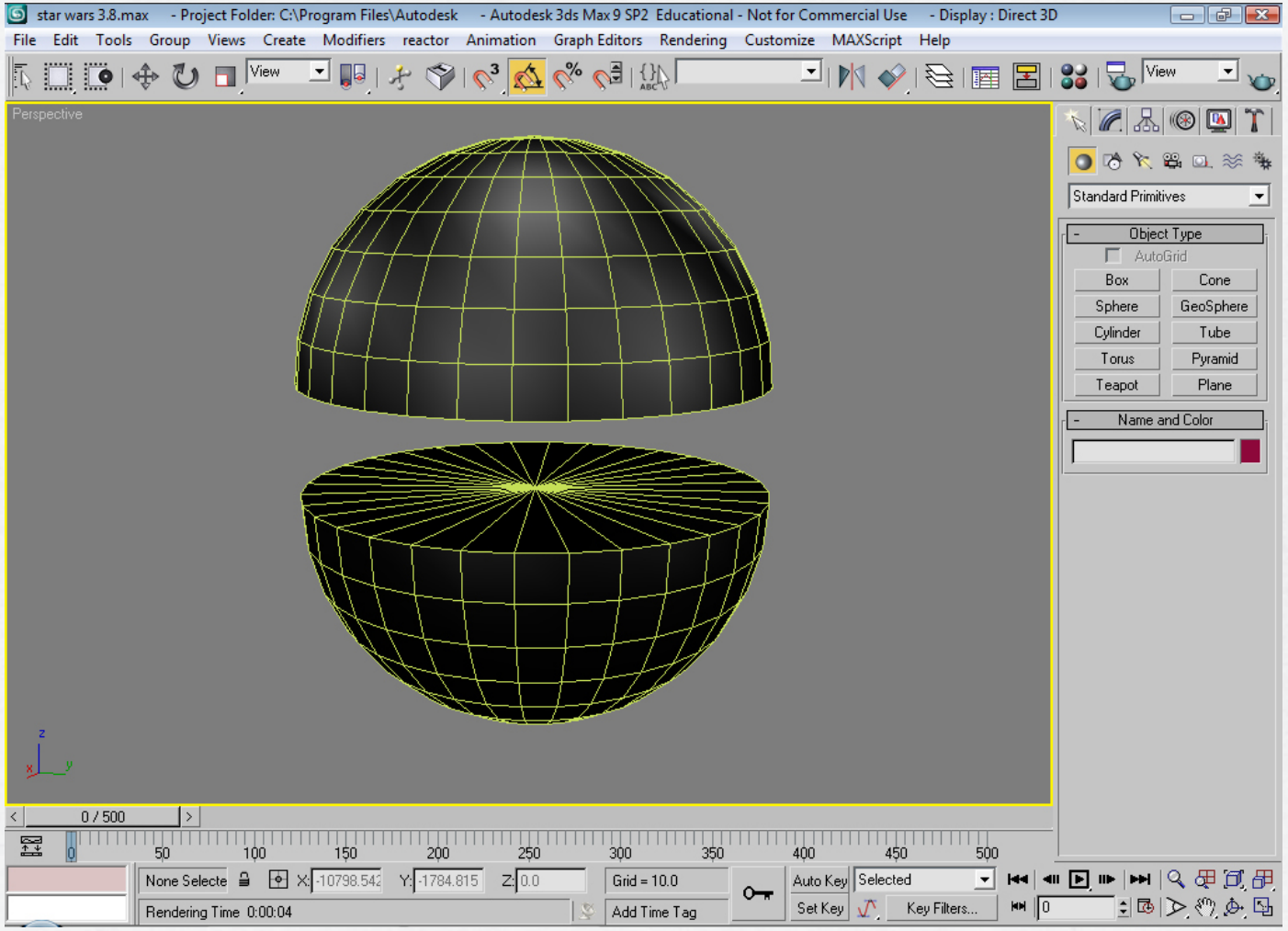


To make the computer screens more realistic the lens effect glow is used to make the computer screens give off some light.

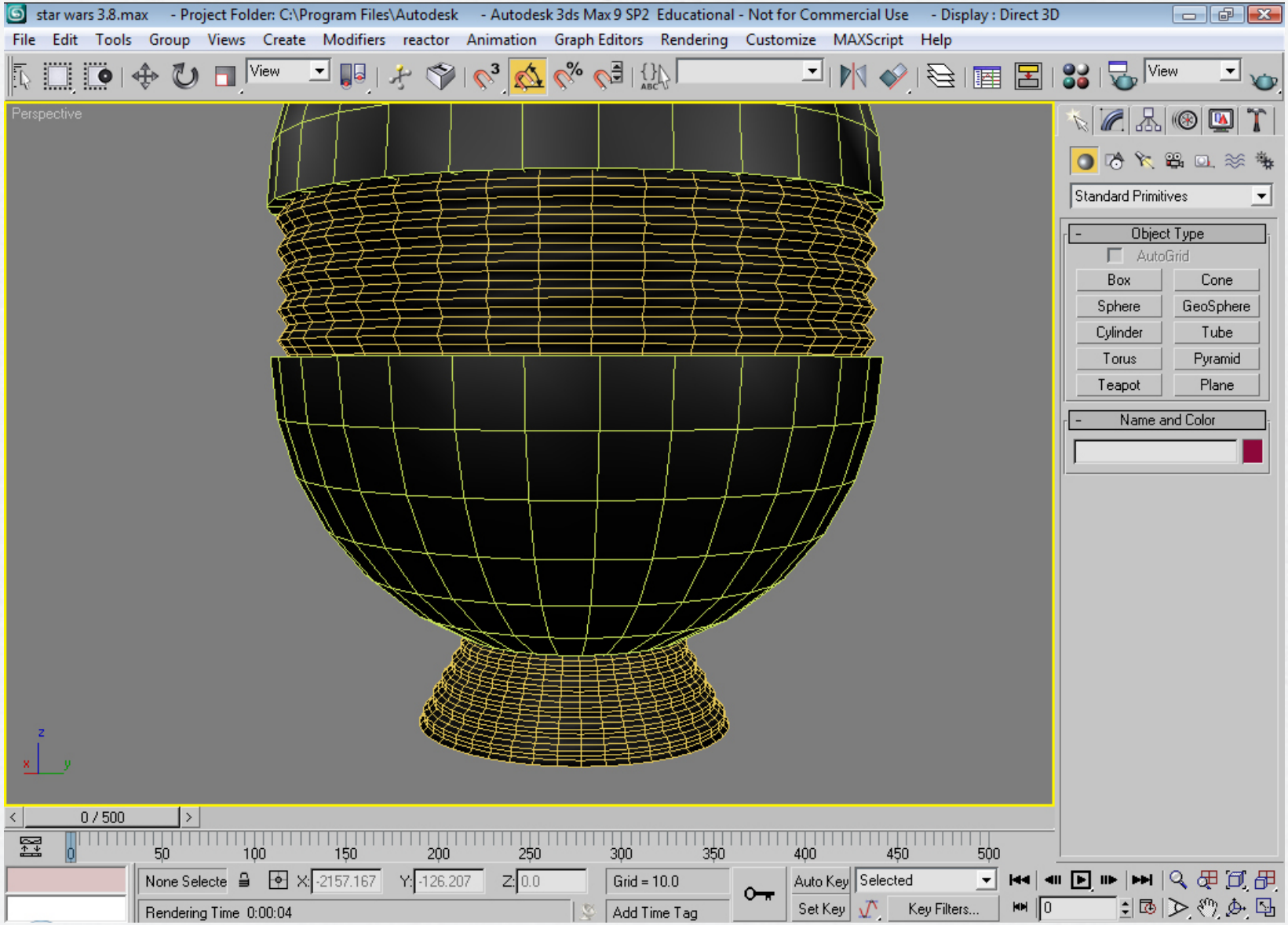


The Centrepiece

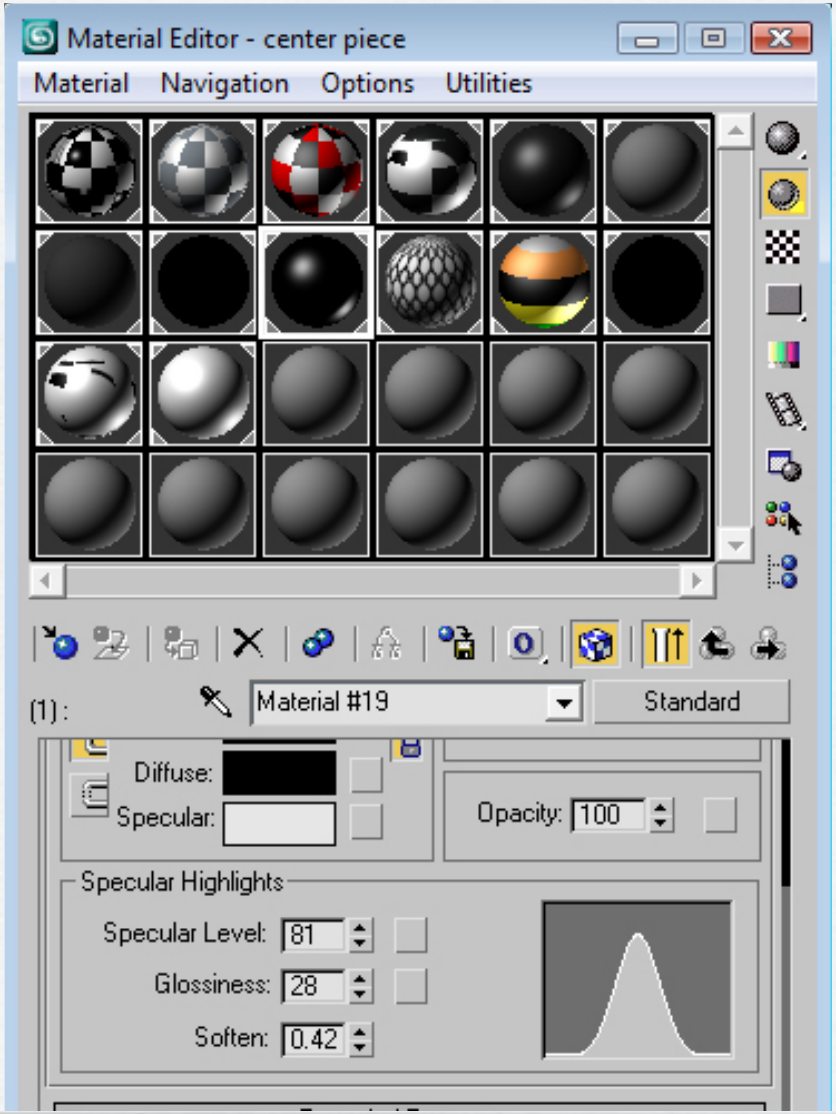
The centrepiece is made up of a number of shapes. They are two spheres, which are cut in half.

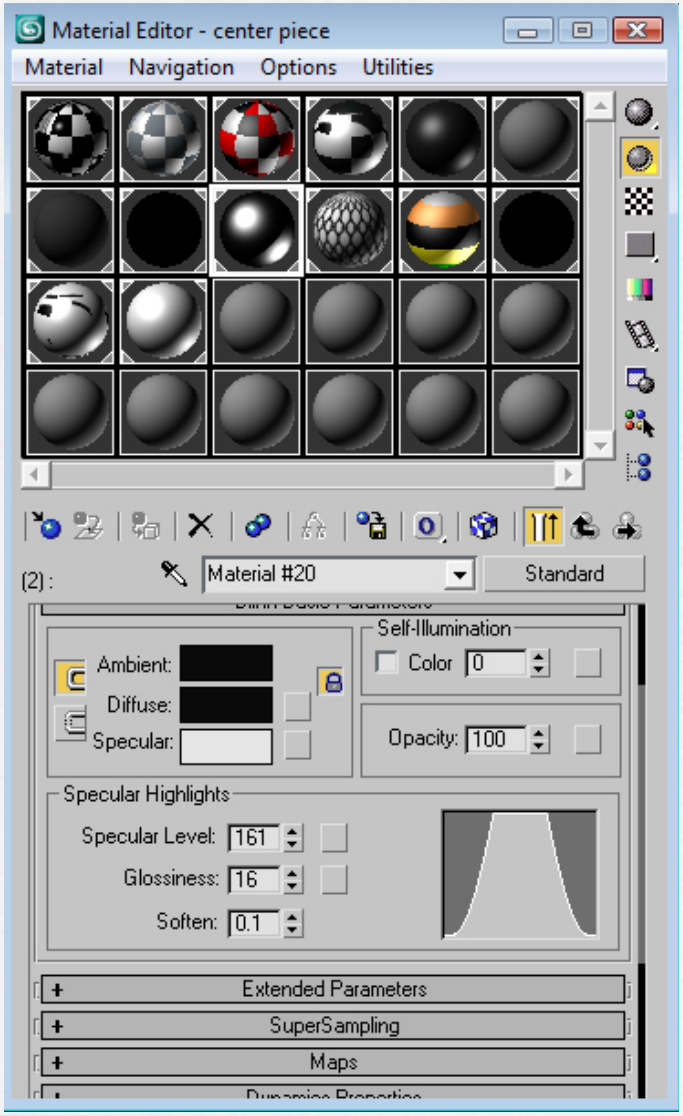


And two cylinders which are shaped to form the base and the middle of the centrepiece.



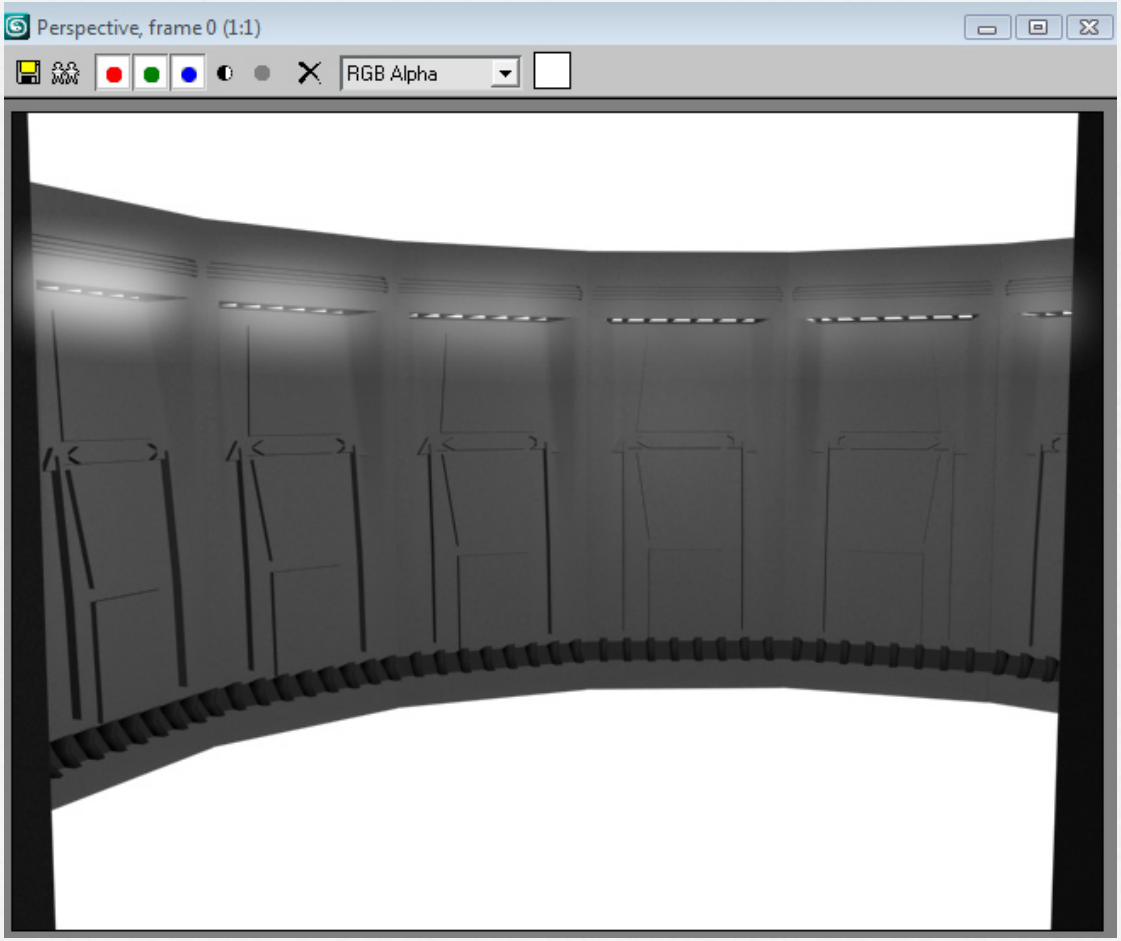
The colour of the centrepiece is all black but when we look at the centrepiece the colours seem different. This is because the two spheres have a different glossiness and specular level to the other two shapes that form the centrepiece.



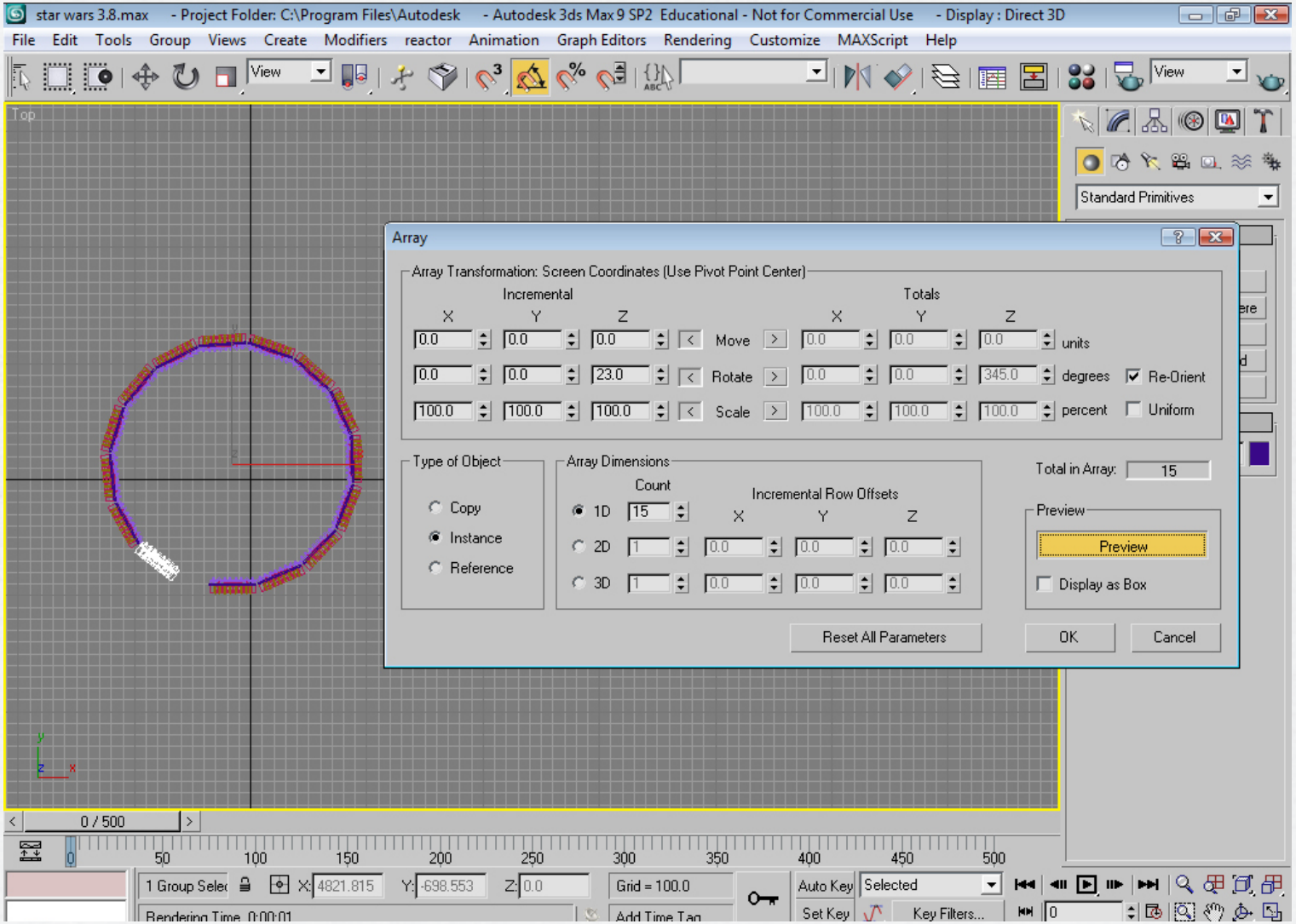


The Backdrop

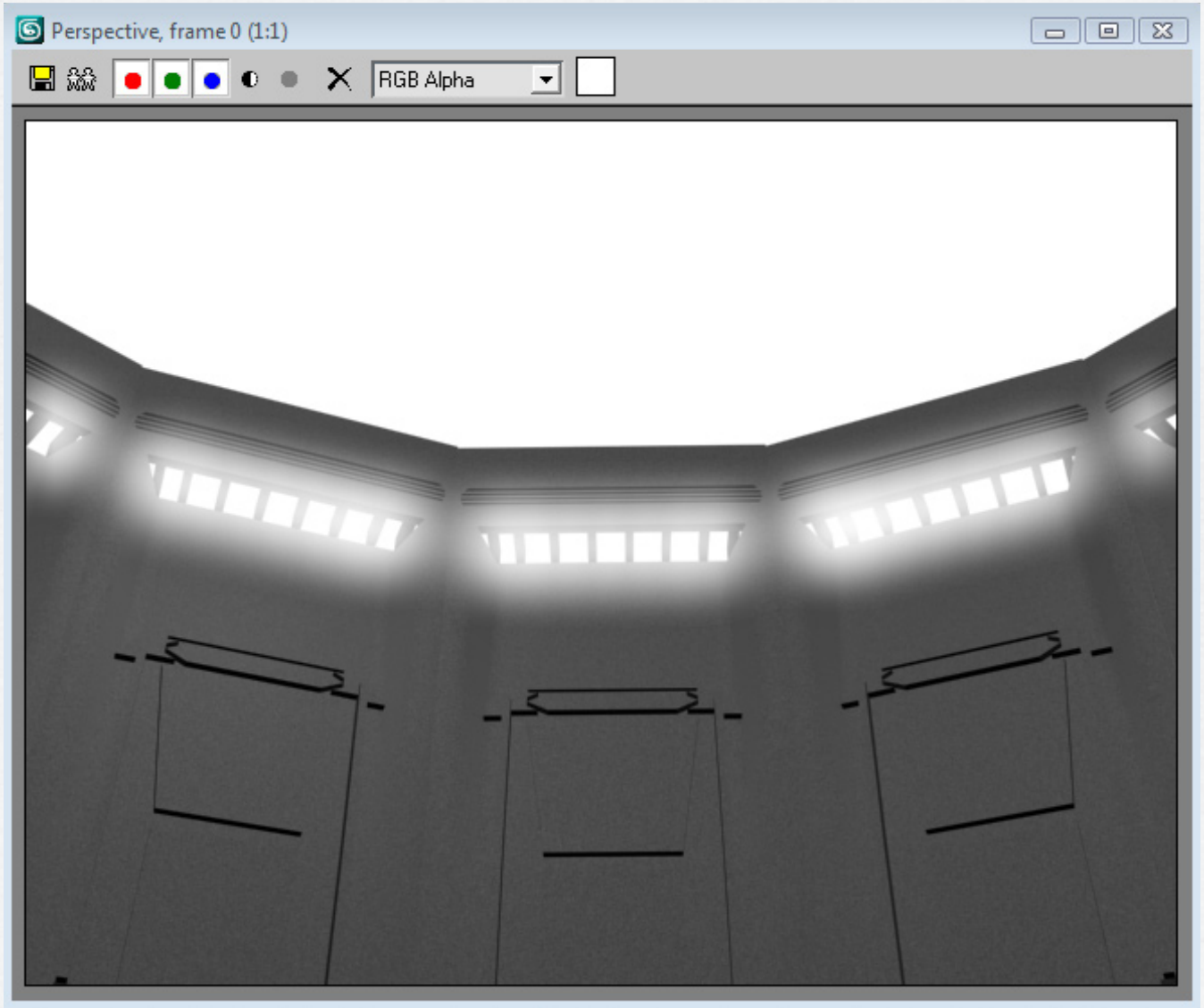
The backdrop is made up of a number of shapes. These shapes are then shaped to look like the backdrop in the actual Star Wars scene.



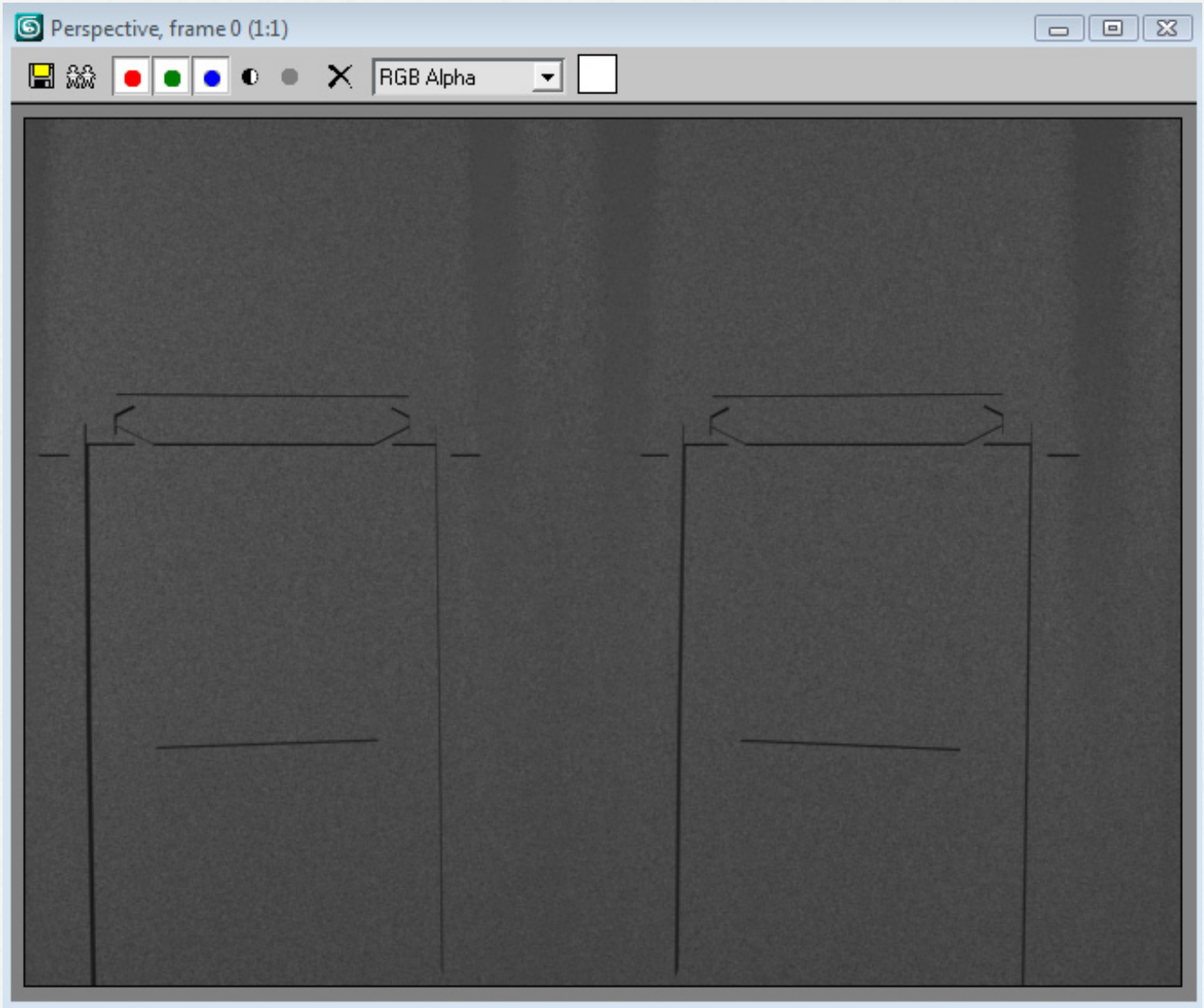
To get them to form in a perfect circle, rather than simply copying and pasting each backdrop and positioning them by eye, I used an array to position them accurately.



From the screen shot below we can see that the vent colour is black but the light emitted is white. Like the table's computer screens, I used the lens effect glow to emit a white light.



The backdrops are also given a bump map in the material editor to give the backdrop more texture and realism.



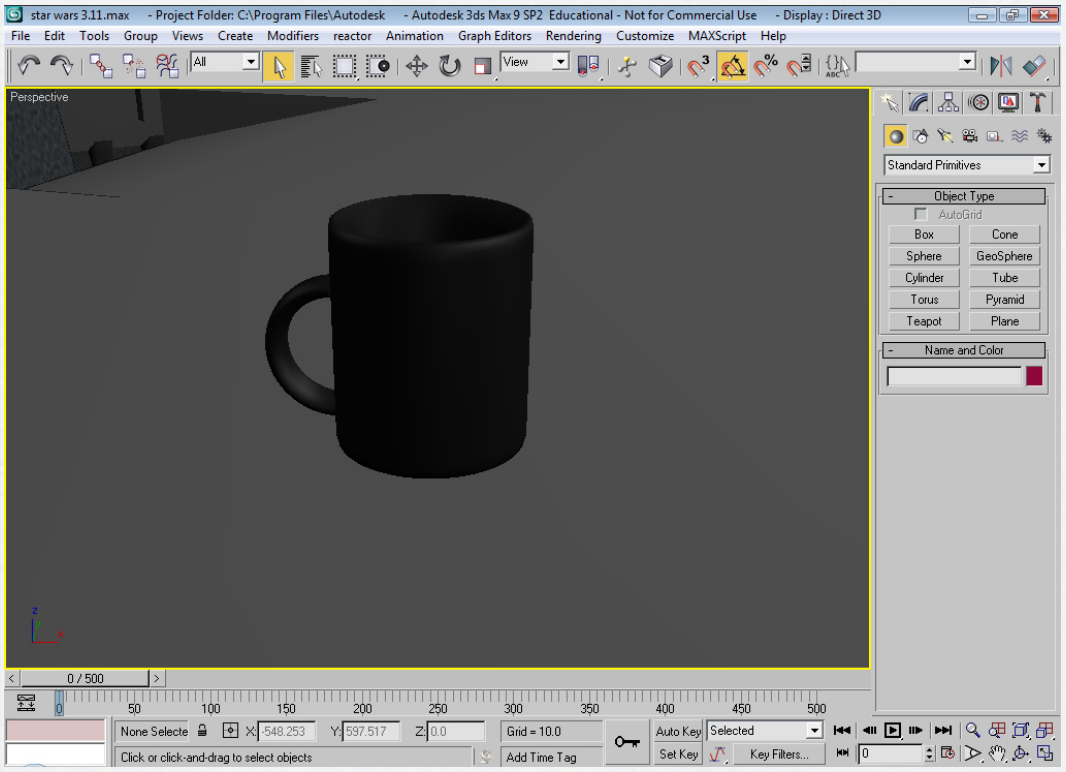
The Characters

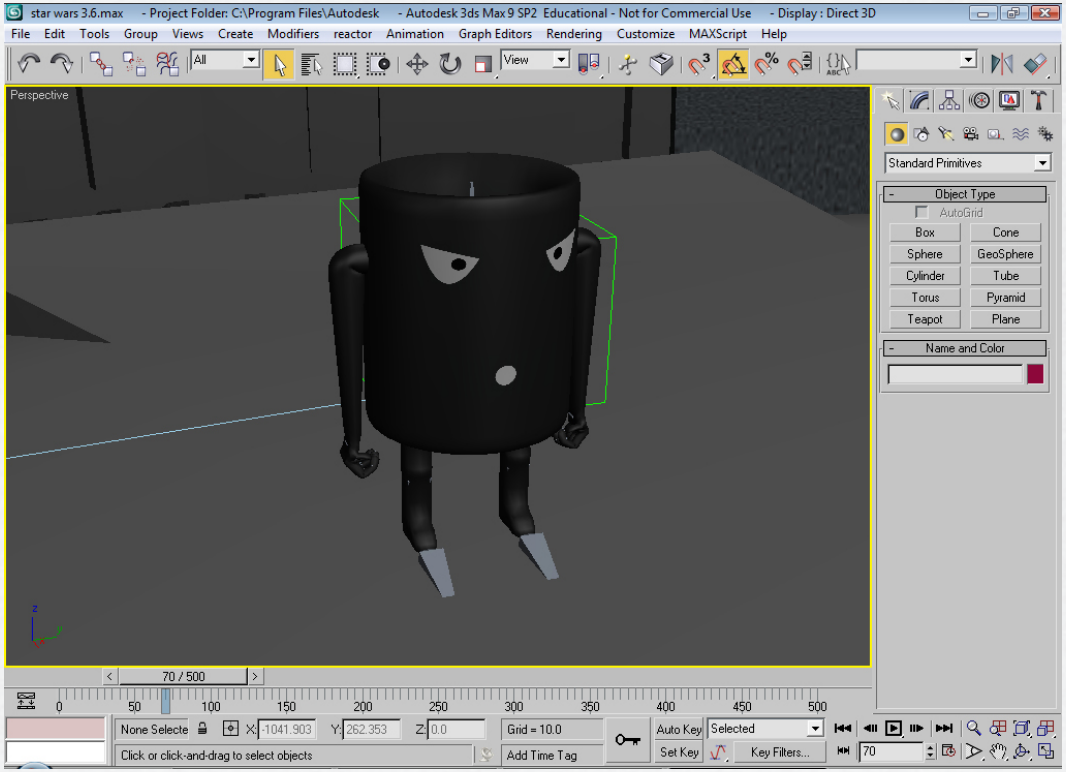
The animation features two cups. Both of these cups will have two sets of arms and legs. The black cup represents Darth Vader, who is the baddie and the white cup represents Luke Skywalker who is the goodie. The characters' arms and legs have to be rigged with bones. These bones will then be moved in various positions at certain points on the timeline to create the movements of the characters. This type of animation is called keyframe. The various movements that will be created include a run cycle, walk cycle and various arm movements with the light sabres. The reason why I used bones for these movements is because they can easily be positioned and they can move and bend the object.

Modifiers will also be used to help with the animation. The twist modifier for example can be used to help the character look from side to side.

The Characters - cont.

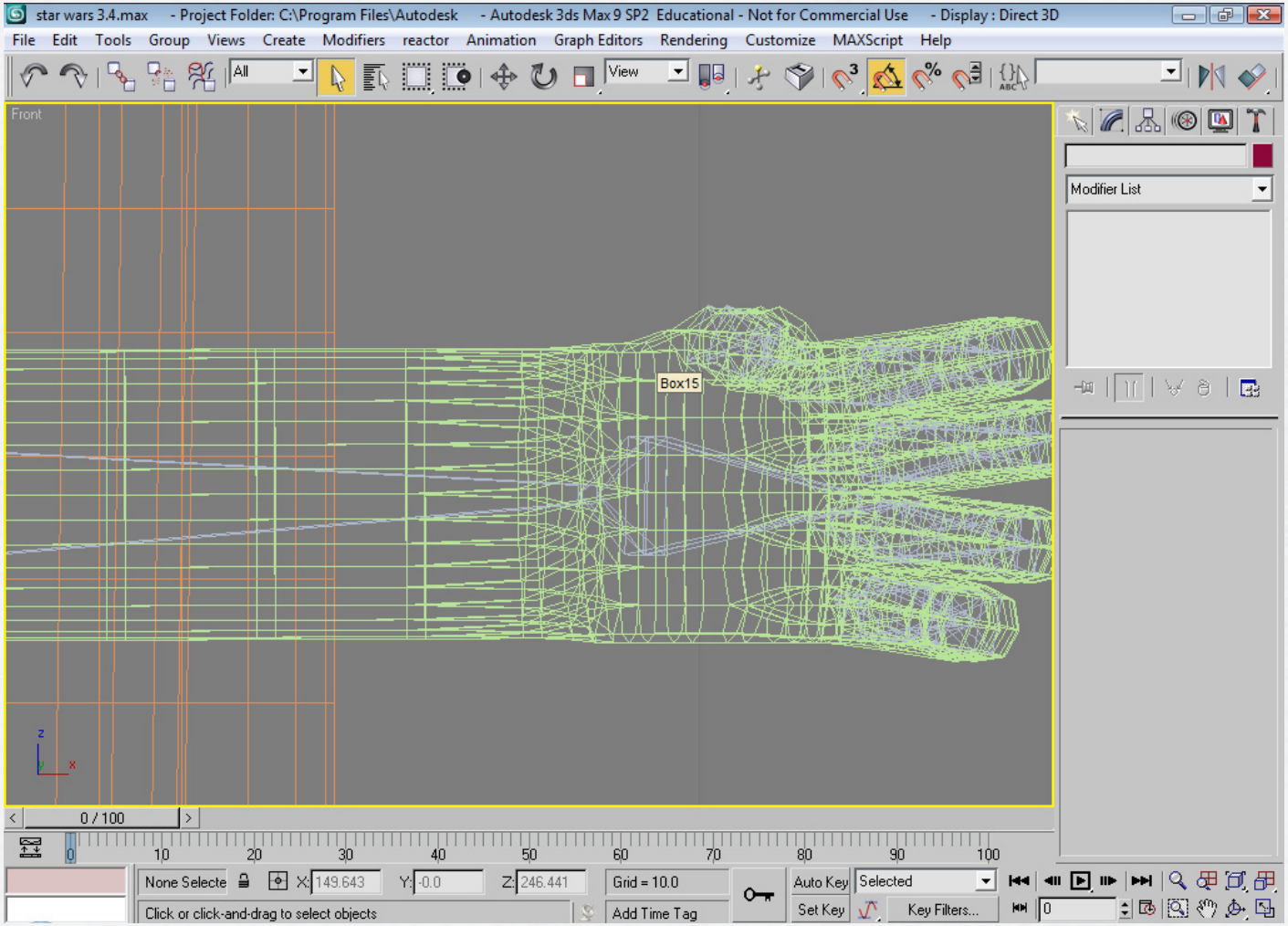
The images below are the cup as normal and the cup with arms and legs.





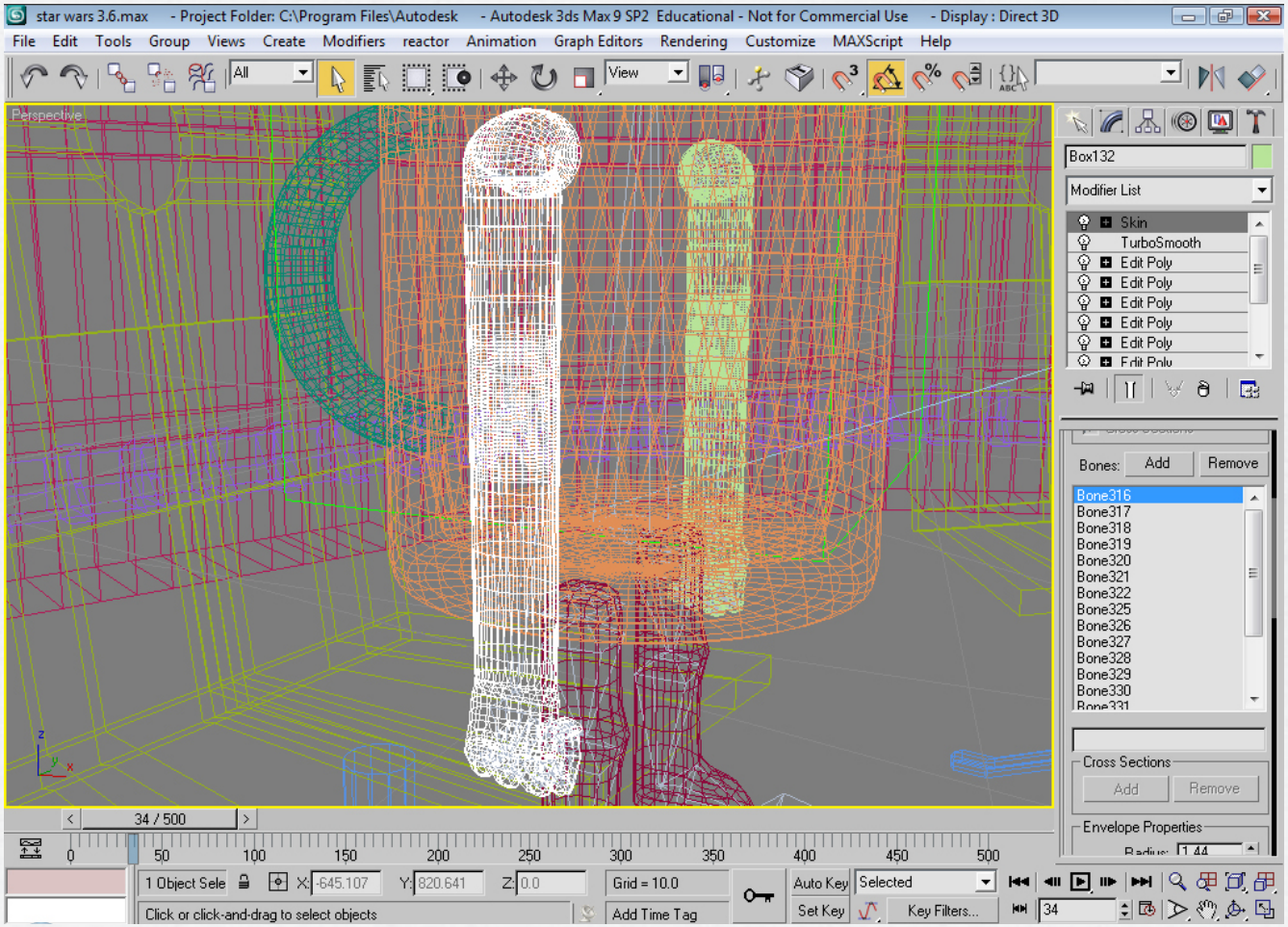
Bones

The next step is to set up the bones for the arms, legs and hands.



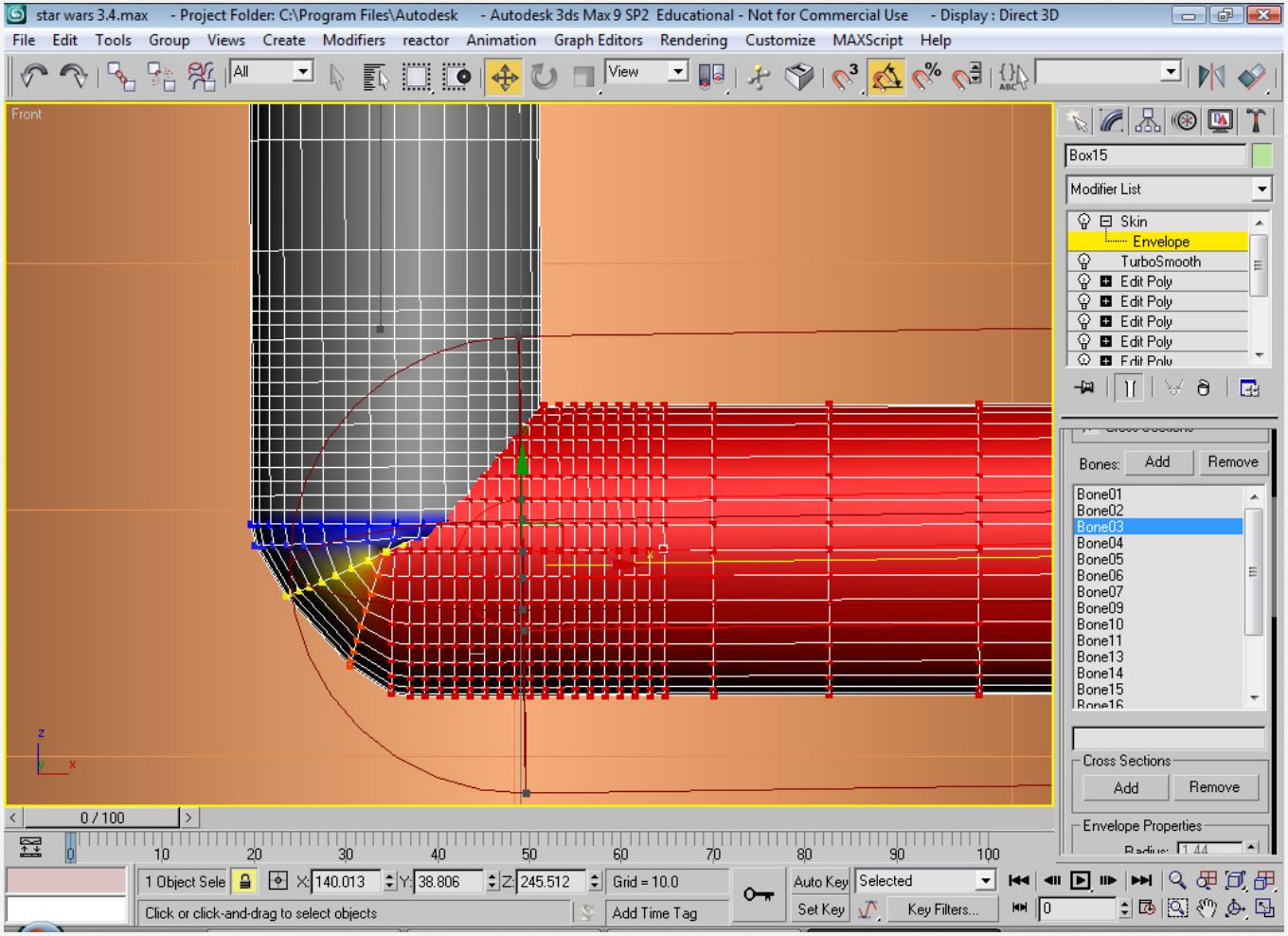
Bones - cont.

Once the bones are positioned with the objects, The skin modifier is then added to the object and the bones are then attached to that object.



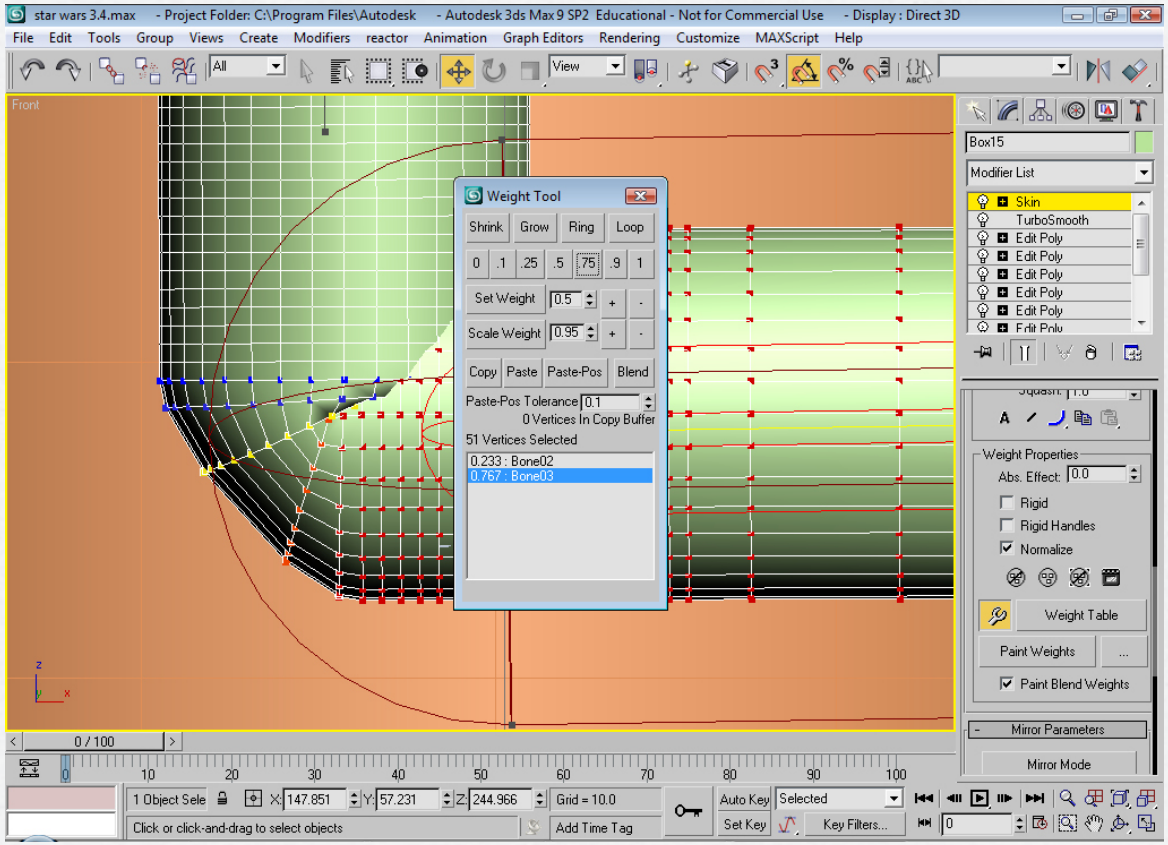
Bones - Envelopes

I then position the arms, legs and fingers to make a ninety degree angle using the bones. I then use the edit envelopes tool to make the joint of the object more natural.



Bones - Weight Tool

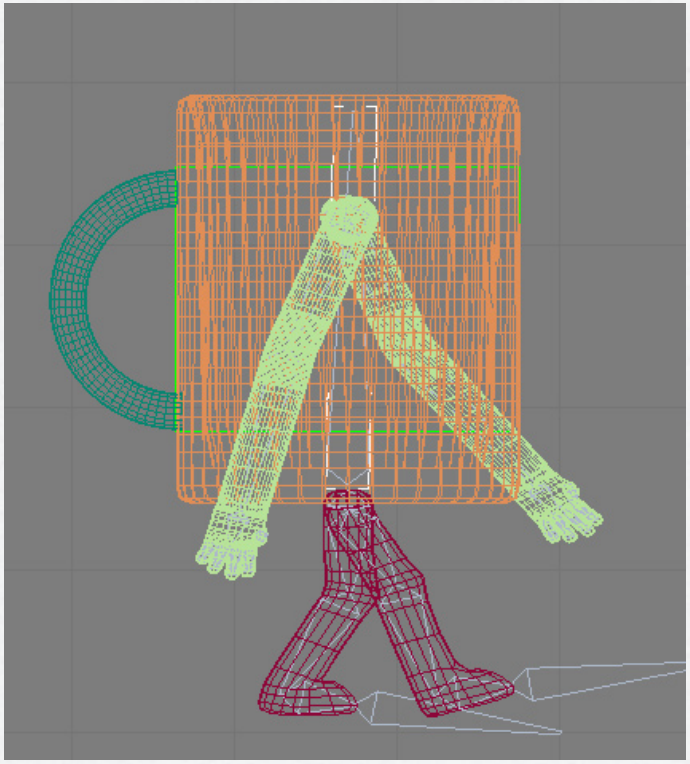
The vertices, in the selected bone, can be selected. The weight tool can then be used to distribute the amount of weight, each vertices has, from the selected bone to the rest of the unselected bones (usually the bones that is attached to the bone selected). The reason why I use this is because, for example, when you bend your own arm the skin stretches and looks different from when the arm is straight.



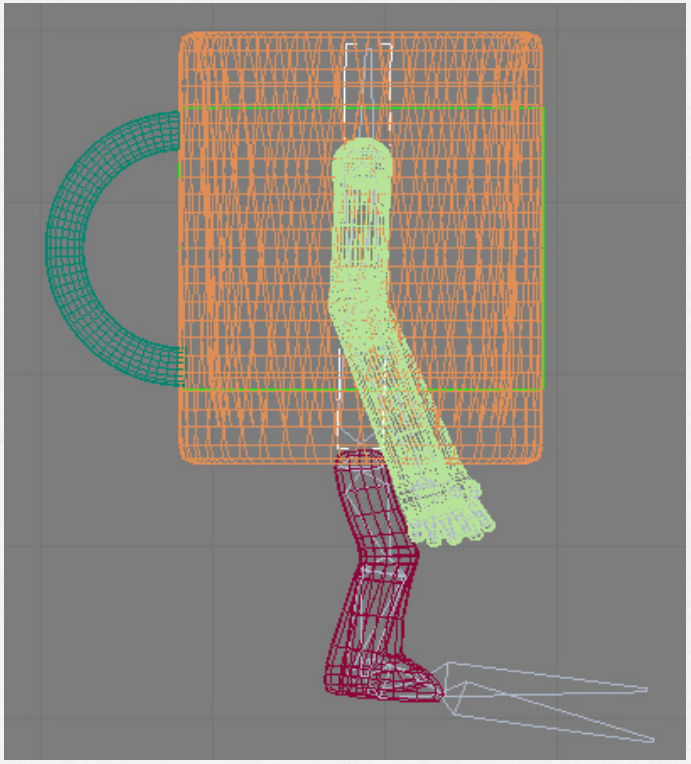
Character - Walk cycle

In order to create the walk cycle I researched other walk cycles. The walk cycle for the cups are pictured below.

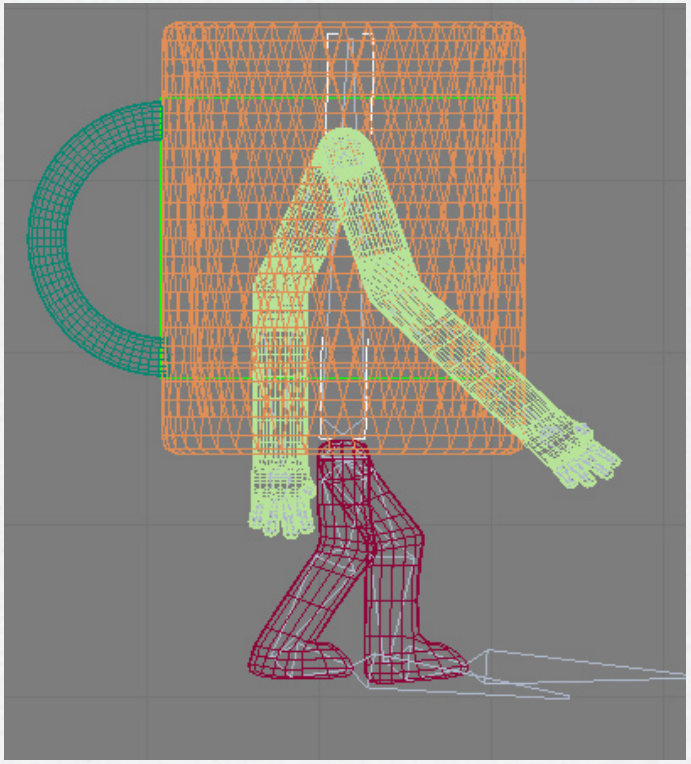
1



2



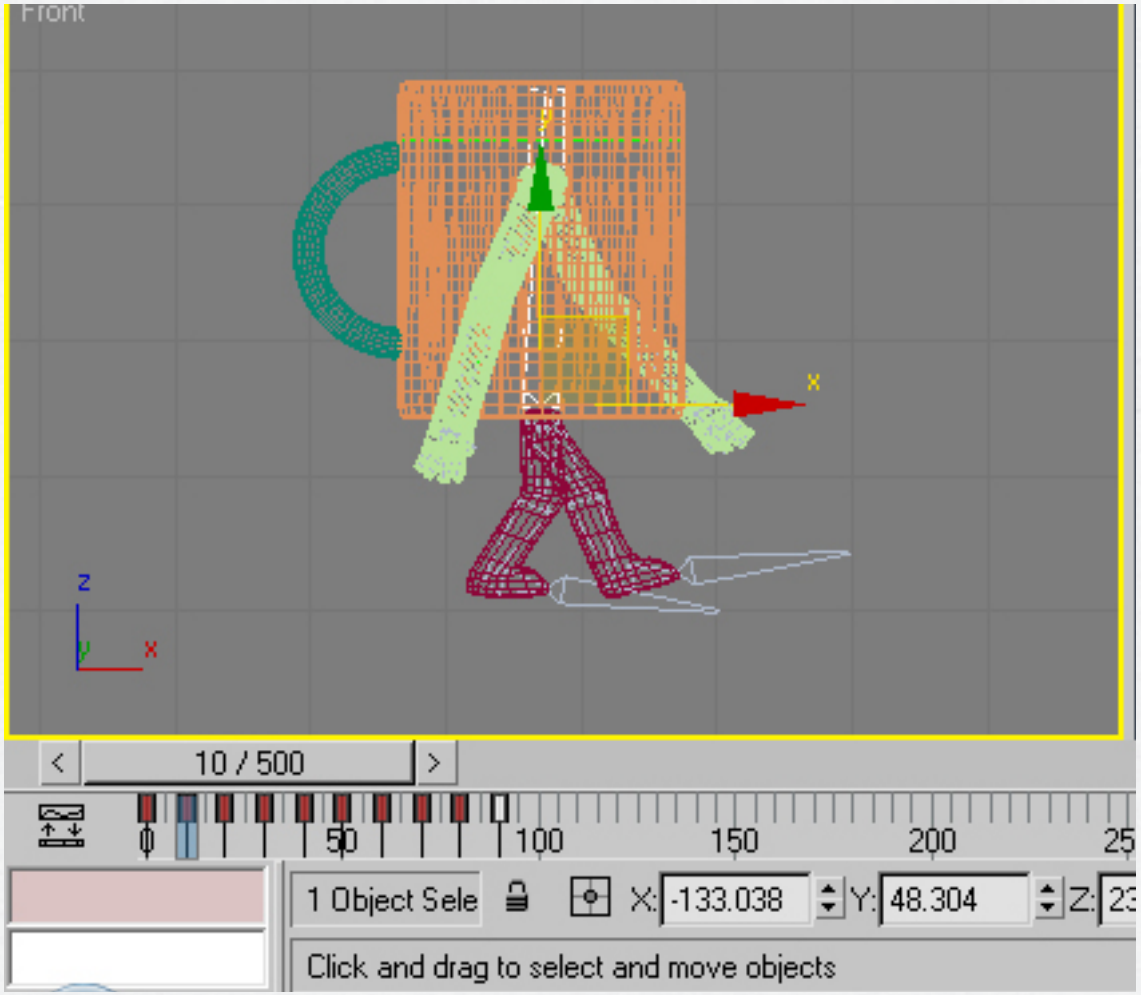
3



The walk cycle is comprised of three key frames for each step.

Character - Walk cycle cont.

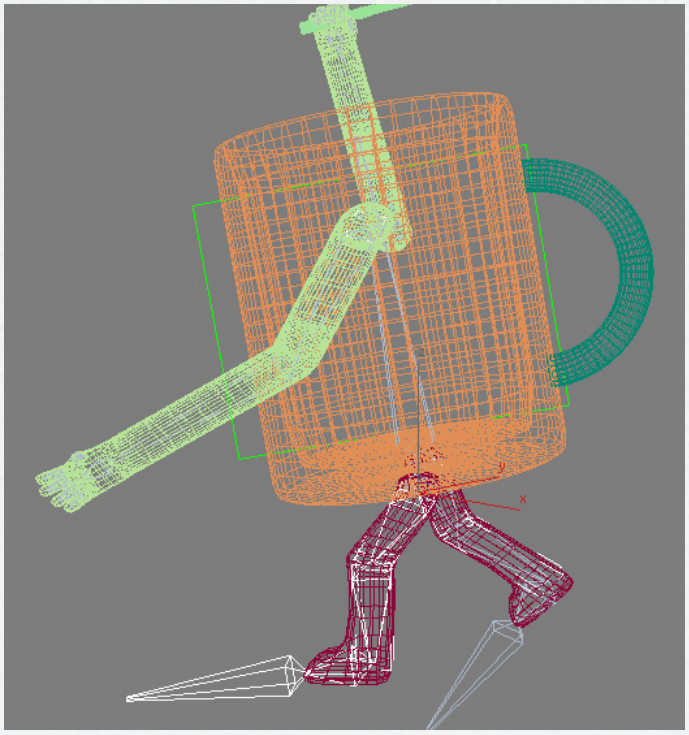
To make the walk cycle more realistic, the arms of the cup swing and also the body itself moves down with each step.



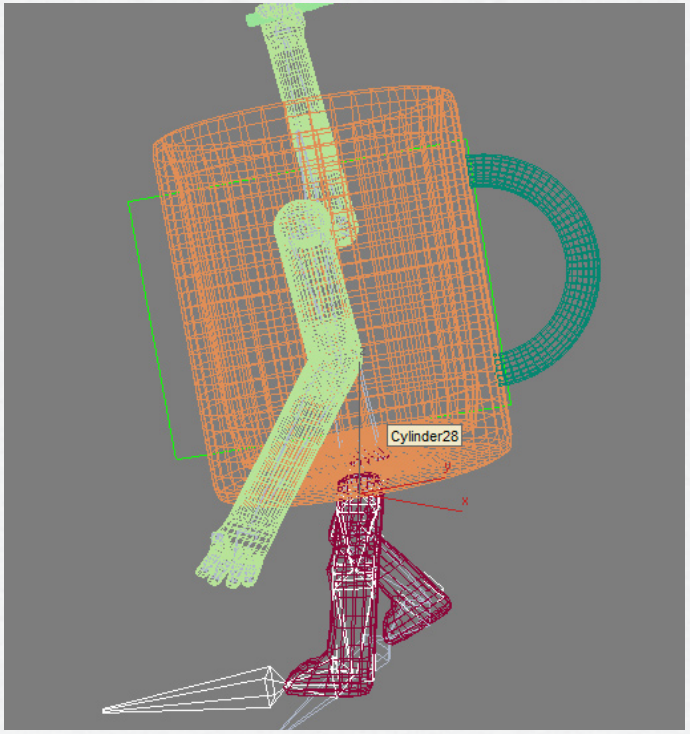
Character - Run cycle

Like the walk cycle the run cycle was also researched. The cup's run cycle is pictured below.

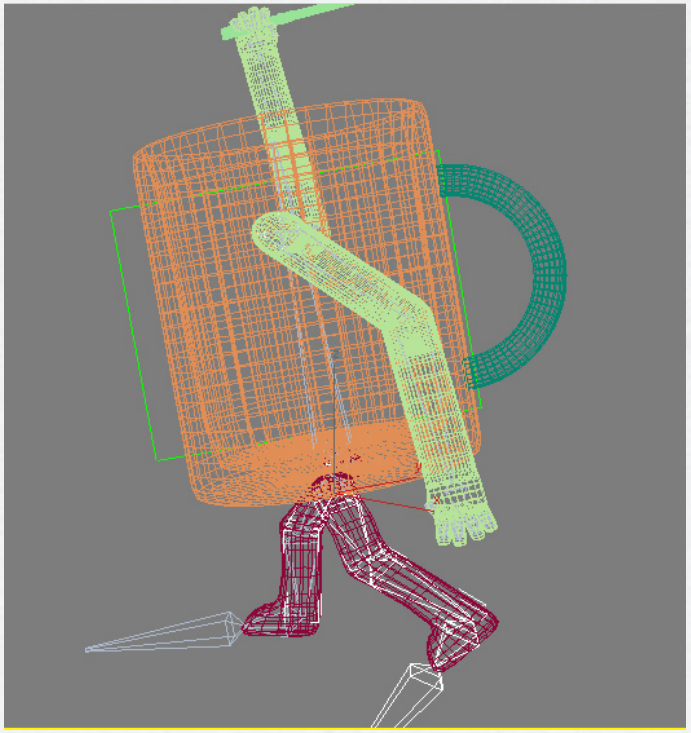
1



2

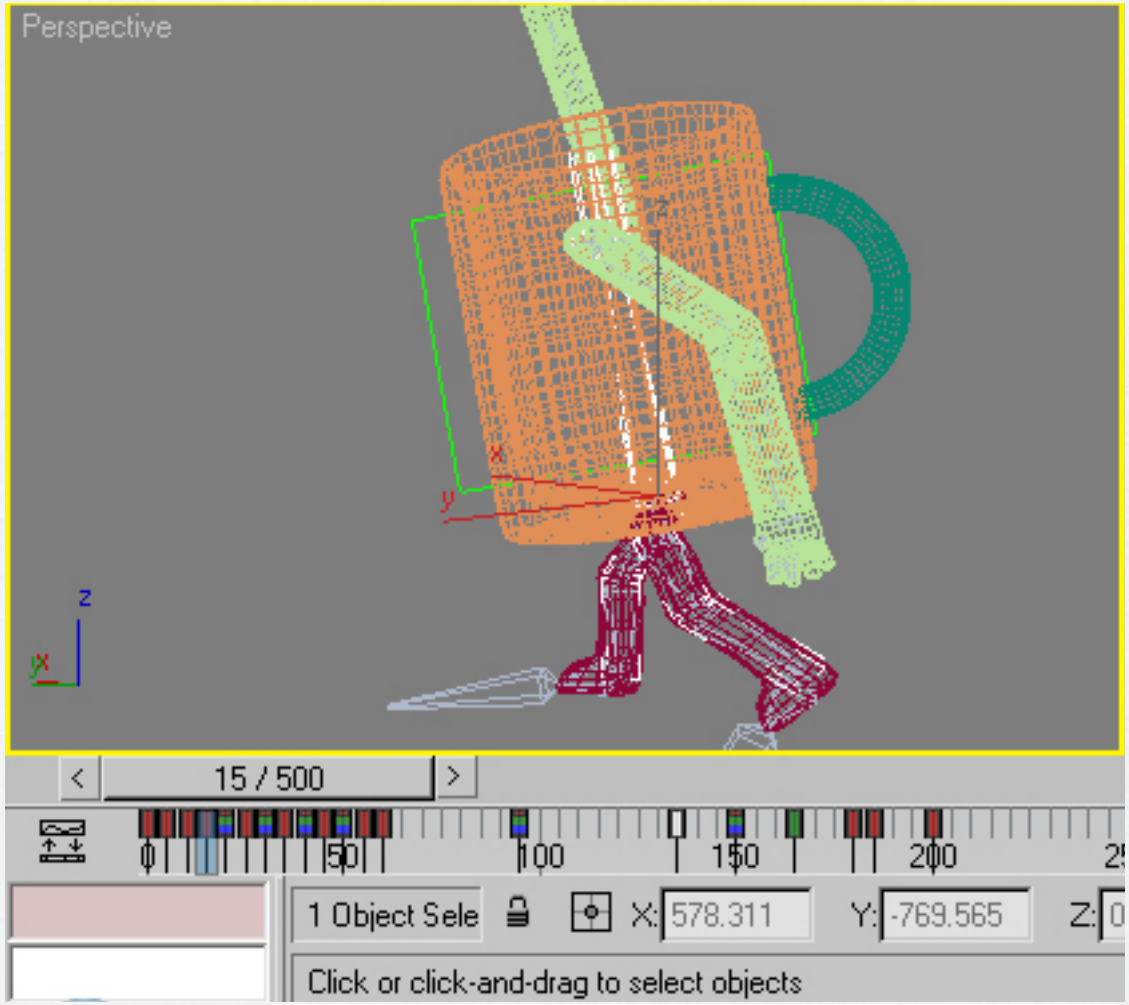


3



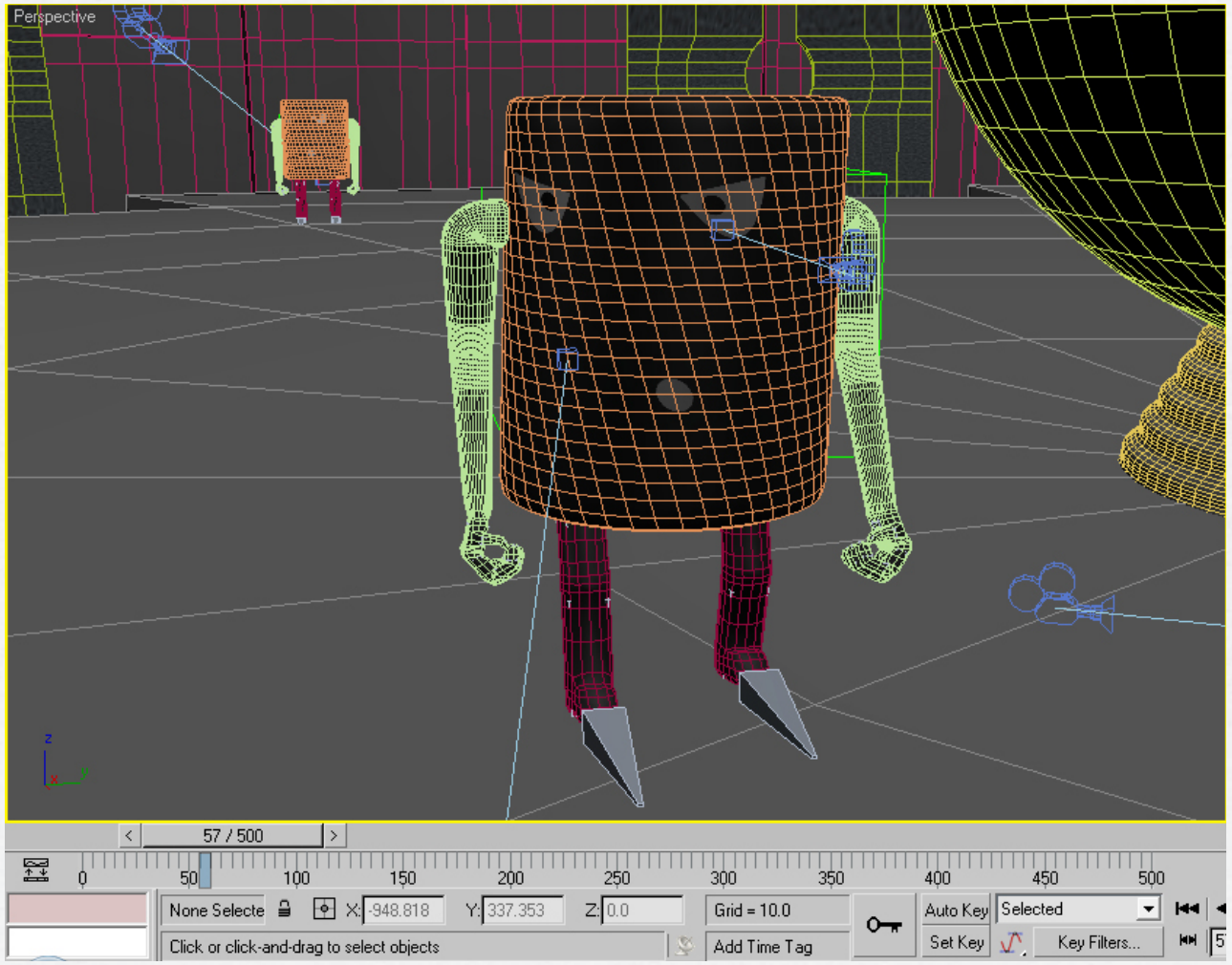
Character - Run cycle cont.

Again like the walk cycle, the arms swing and the body dips every time the cup take a step.



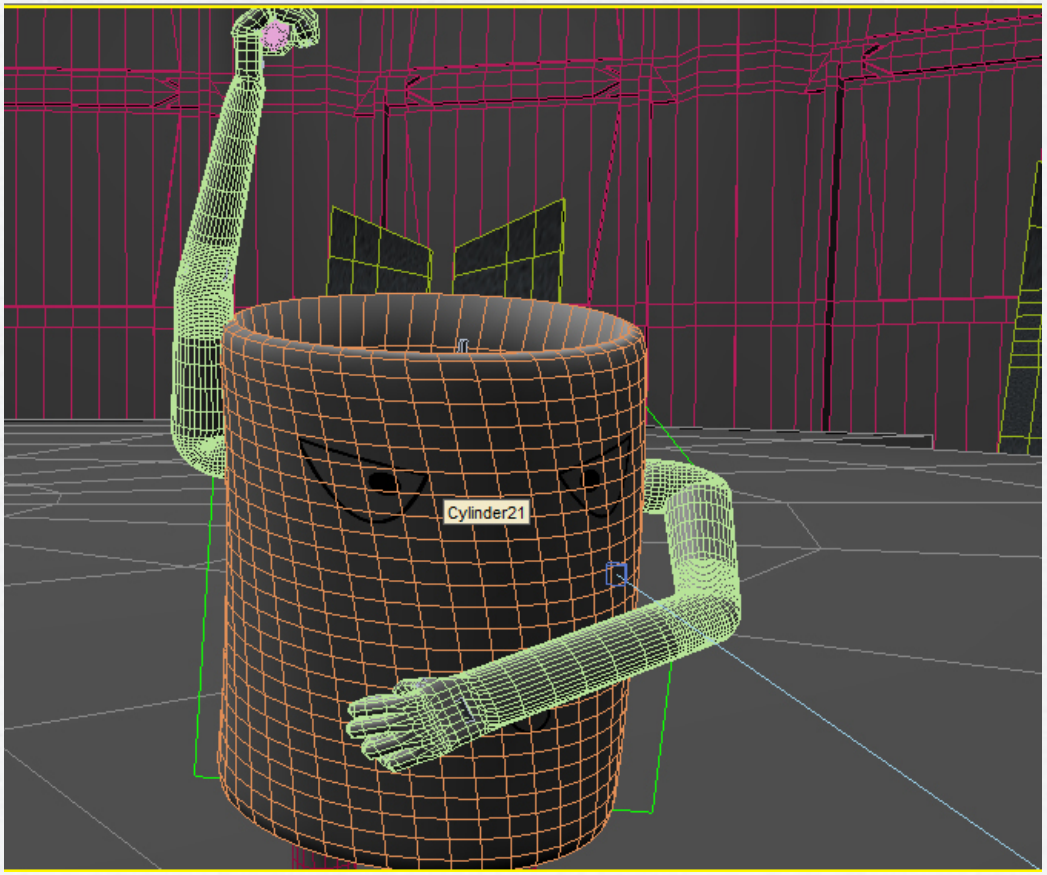
Character Movement - Look around

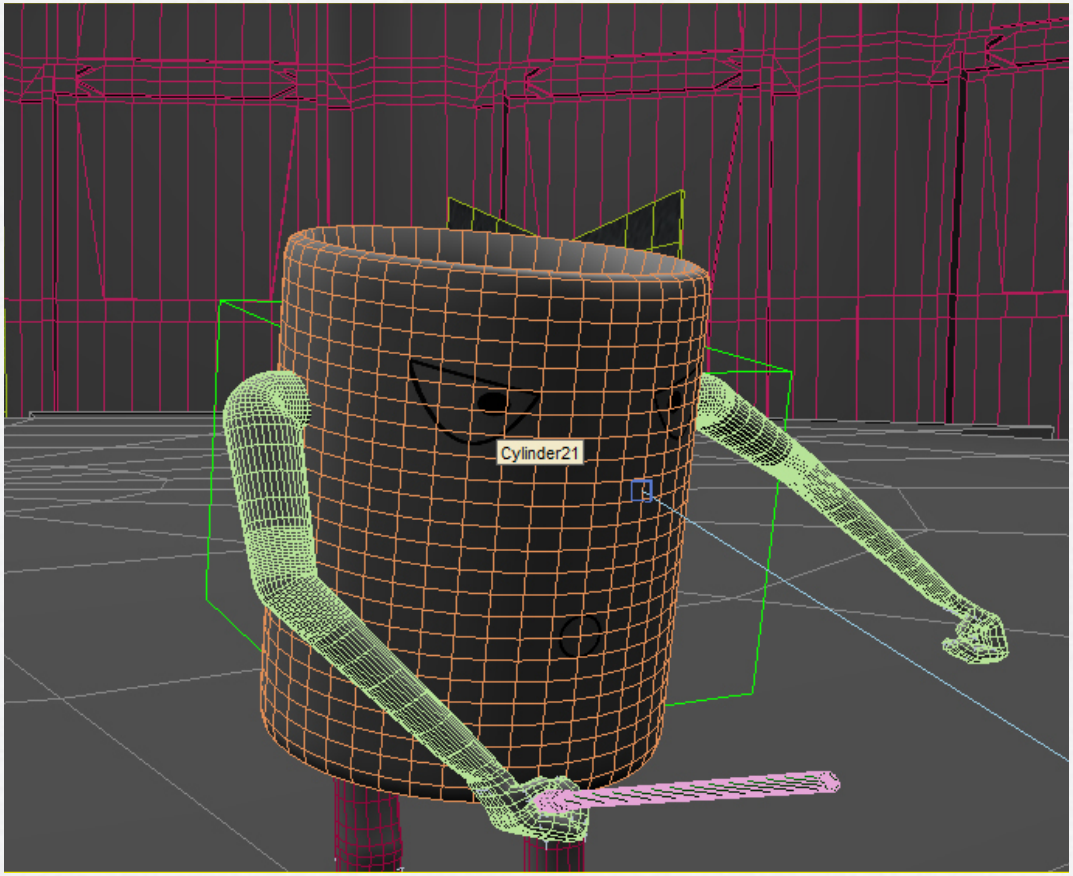
To make the cup look around the place, a twist modifier was used to twist the cylinder part of the cup.



Character Movement - Lightsabre swipe

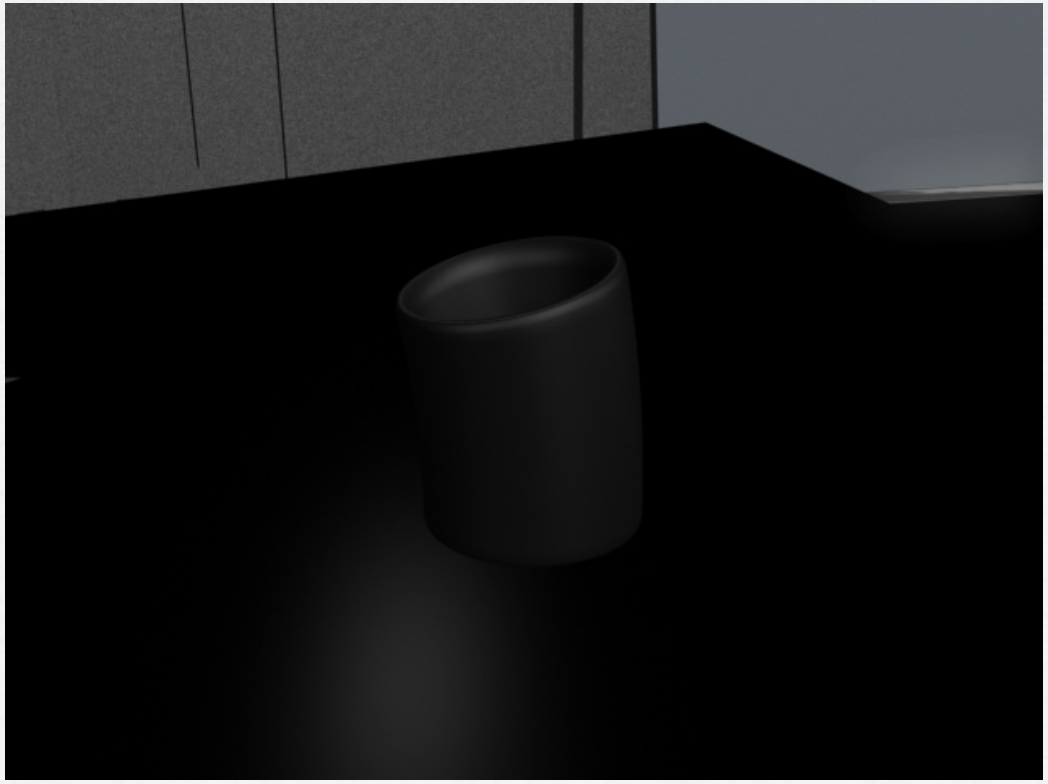
The twist modifier was also used here to simulate how the body moves when striking someone with a sword or lightsabre. Also the character's left arm is placed in front and starts to move as he swipes his lightsabre.

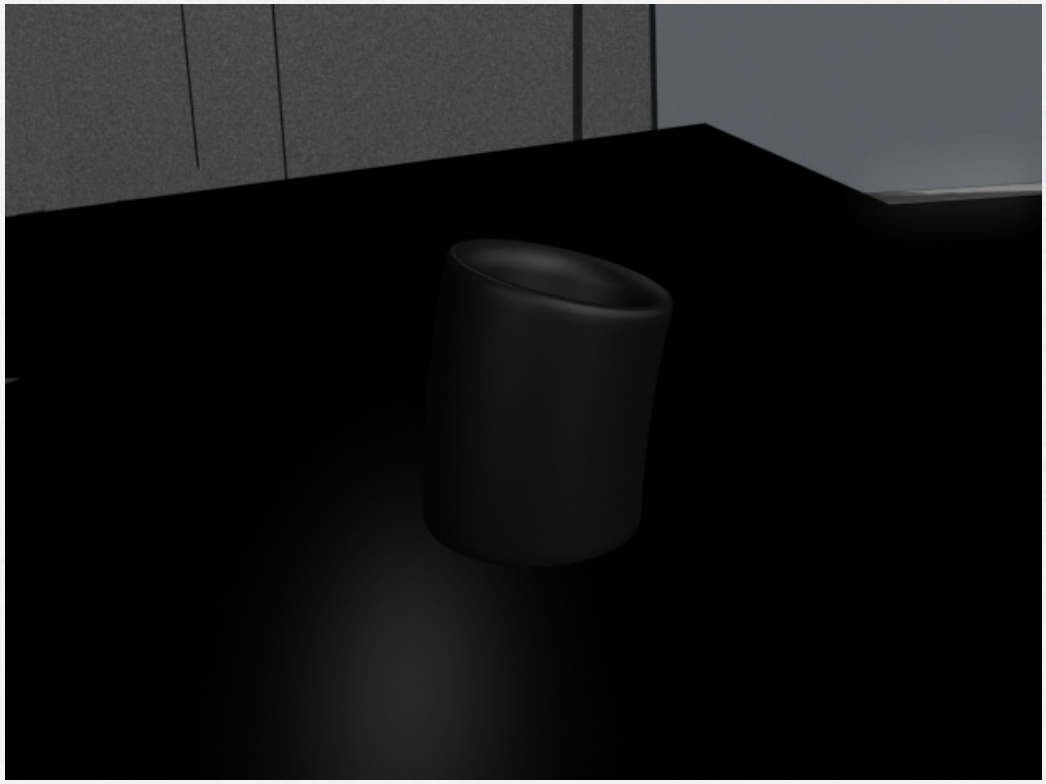




Character Movement - Cup Transform

At the start of the scene we see the cup bending as if he is struggling to break free. To achieve this effect I used a bend modifier on the cup and keyframed each bend.

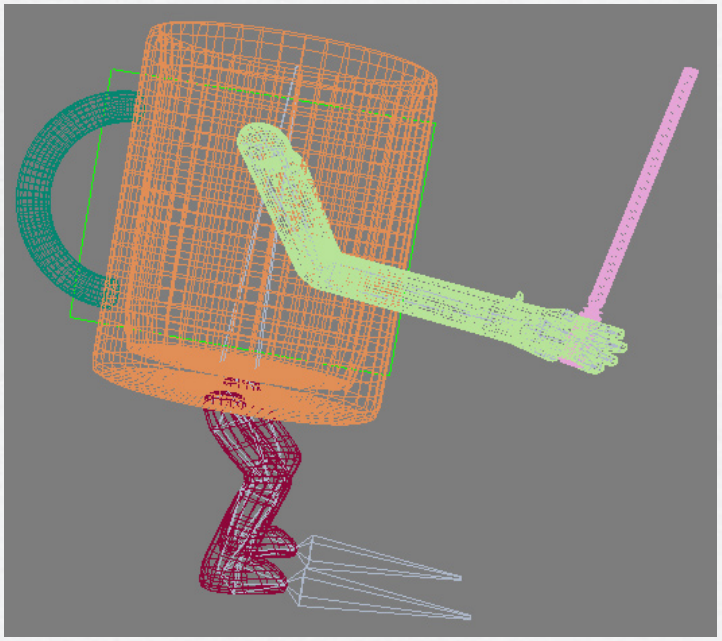




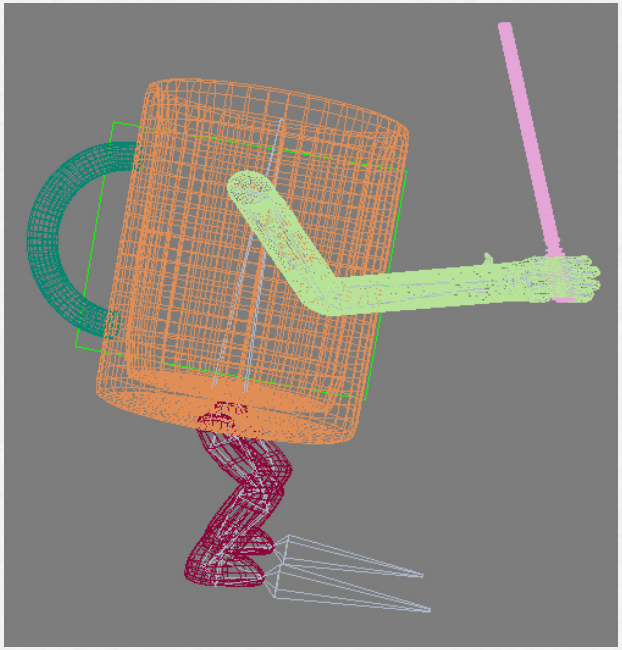
Character Movement - Jump

Research was undertaken to observe how a character would jump. The white cup jump is pictured below.

1



2



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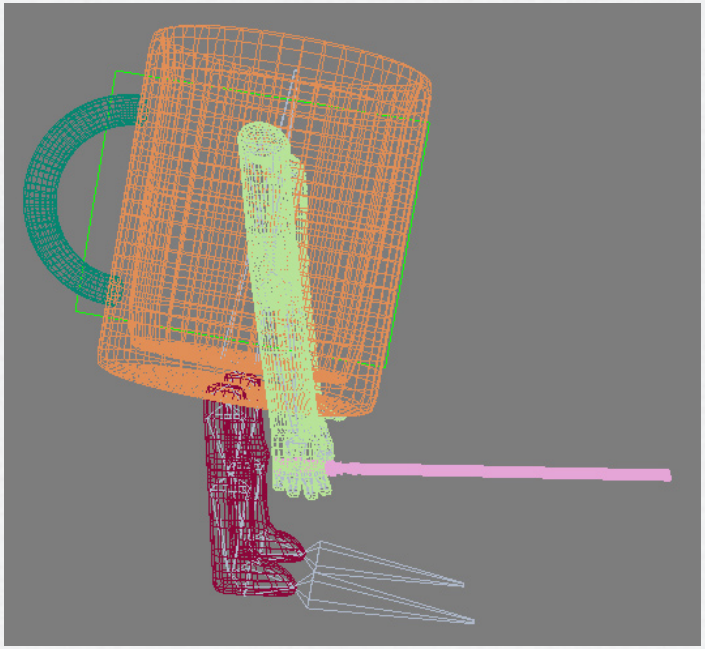
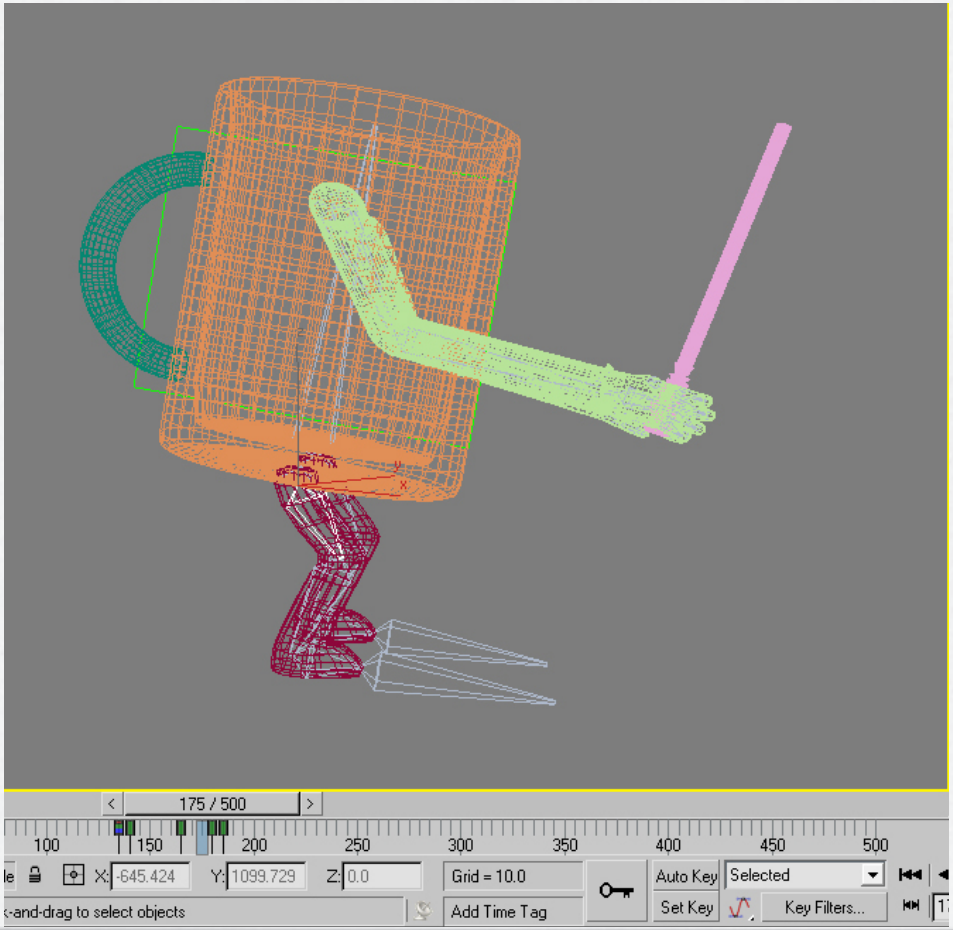


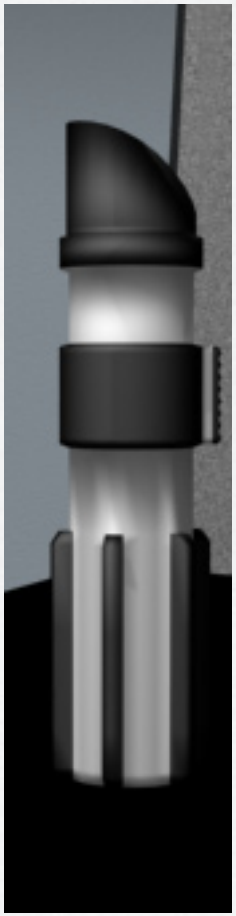
Character Movement - Jump cont.

The arms, in the jump movement, start to bend at the elbows as if the white cup is building up for the jump. At the end of jump the arms are then stretched out as if it was to release a burst of e nergy. The same could be said about the legs. At the start of the jump the legs are bent and at the end of the jump cycle the legs are straight.



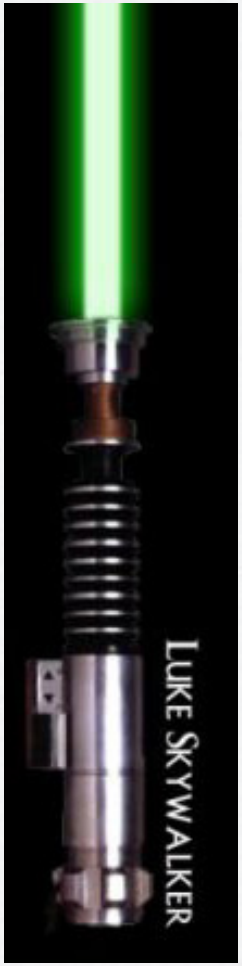
Lightsabre - Red

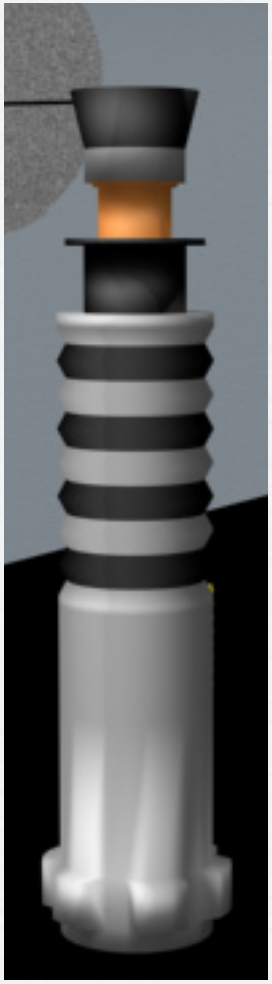
Found an image of the lightsabre that Darth Vader used and modelled that lightsabre from a single cylinder.



Lightsabre - Green

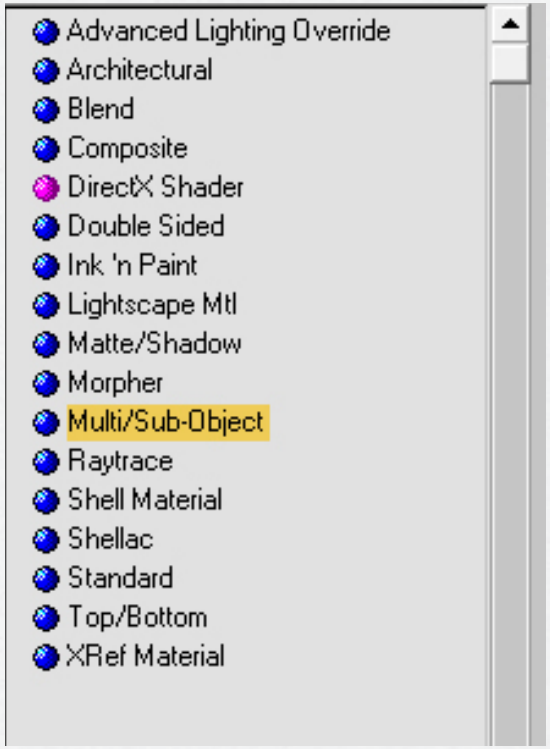
Found an image of the lightsabre that Luke Skywalker used and modelled that lightsabre from a single cylinder.

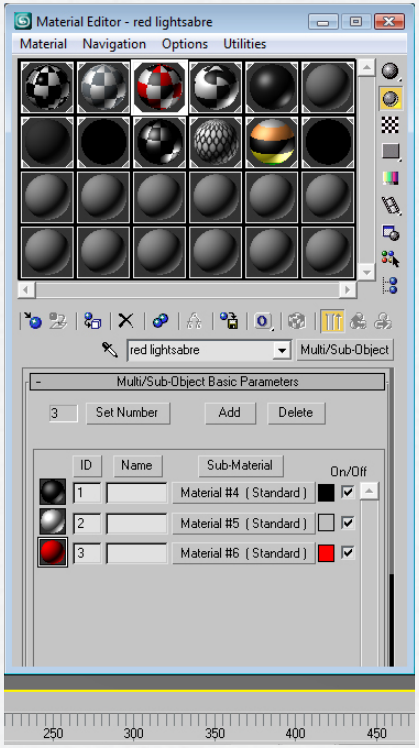




Lightsabre - Texturing

To do the texturing I used an edit poly modifier, selected a number of faces and then gave those faces a material ID. I then opened up the material ID, selected a sphere and chose the multi/sub object. The multi/sub object allows you to have as many textures as you like, whilst only using one default sphere. Each texture is given an ID. This ID corresponds to the material ID I gave to the selected faces of the lightsabre model.





Shadows

The shadow being used is advanced ray trace. This will give me more control over how that shadow will look. Rather than having just a simple, solid and pure black shadow the shadow parameters are adjusted to make the shadow more realistic.