

Digital Castle



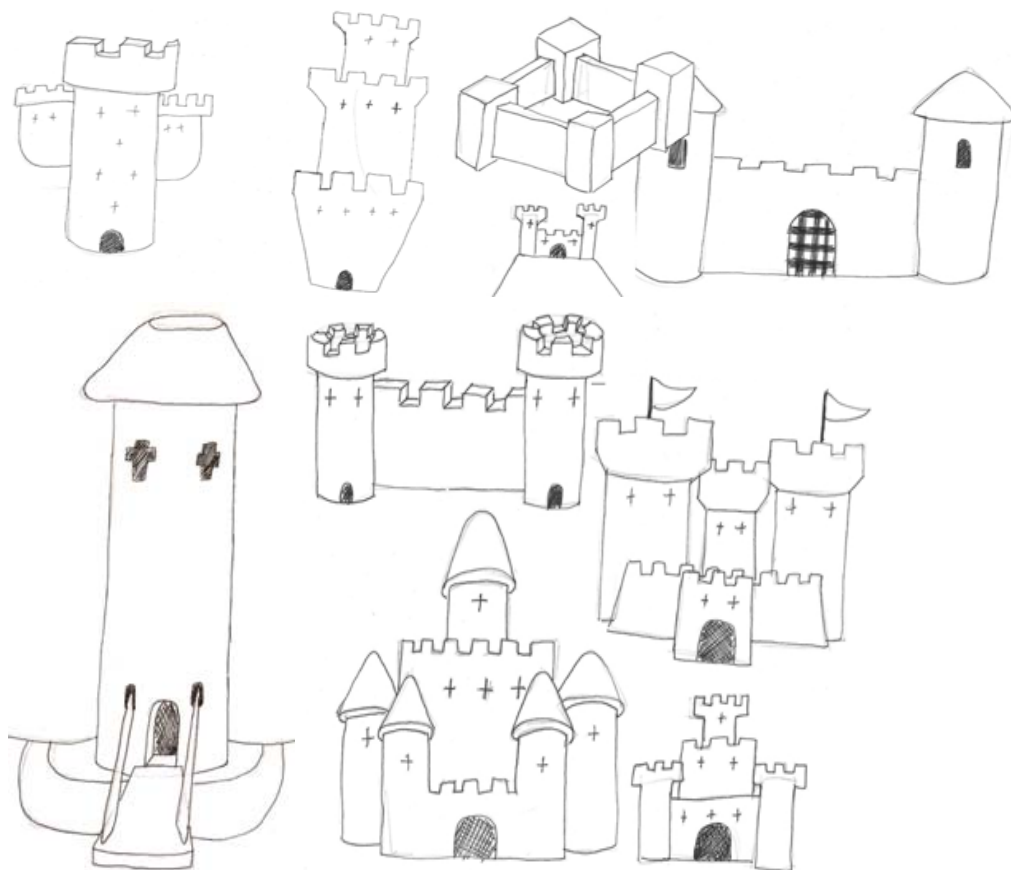
By Mathew Hughes
Multimedia Production and Technology

For my first Digital Media Environments project I chose to do a castle and its surrounding environment.

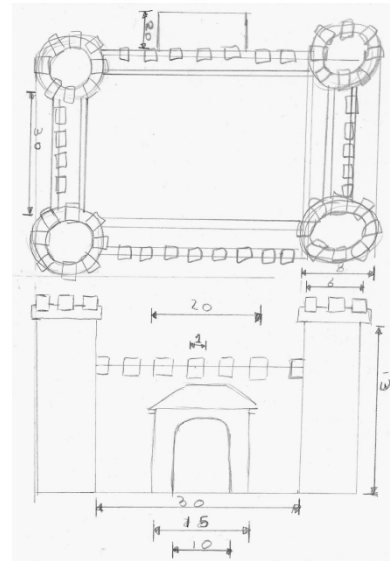
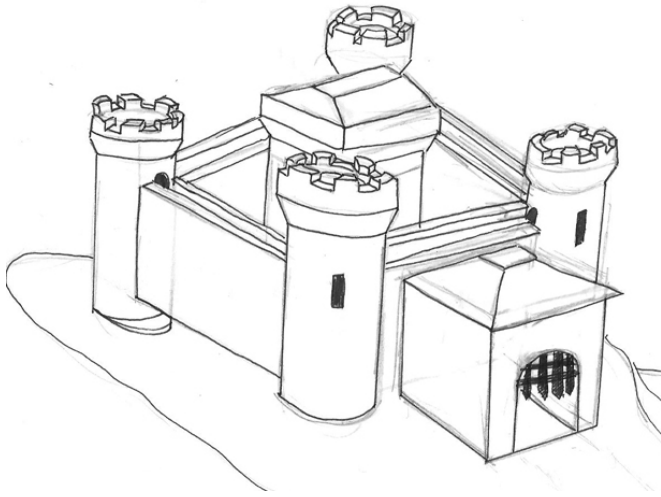
I chose a castle as there are lots of interesting shapes, such as long flat walls, tall round towers and smaller details such as battlements. It was however my first time using any kind of 3d modelling software, so it was simple enough for me to learn 3ds Max as I worked on the project. My initial idea was that the castle could have a moat (allowing me to experiment with water and reflections). It also gave me a chance to experiment with creating a suitable backdrop as well as trying to create many different materials (such as stone for walls, wood for roofs, mud/grass on the ground etc.).

Right from the start of the module I knew I would need to look at many different tutorials and guides throughout the project.

Below are some initial design sketches of my castle. I decided to start with sketches before even opening 3ds Max, as I didn't want my lack of understanding of the program to affect my ideas. Also by having a drawing of what I wanted to create, it gave me something to aim towards.



Below is a sketch of my final idea, along with a detailed plan of the castle and a sketch showing details of the environment I will create.



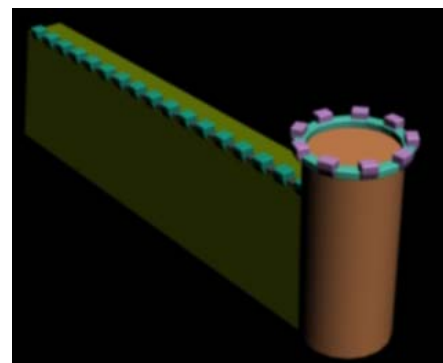
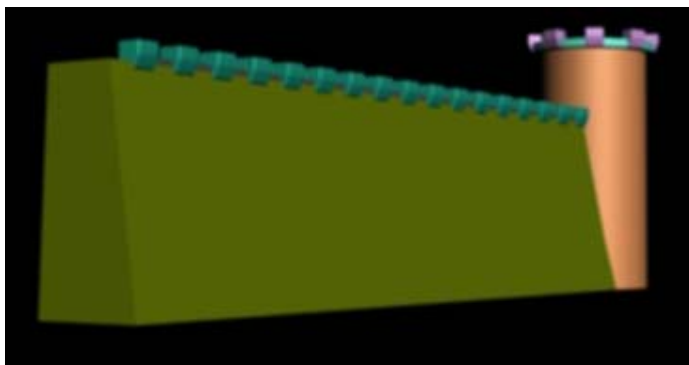
I chose the above design as I felt it was simple enough for me to be able to create with no knowledge of 3d modelling and yet complex enough to test the skills I hoped to gain.

Before I started to create my project in 3ds Max, I had to learn the basics. To accomplish this I spent a week reading and completing several guides and tutorials, including those that come with the software and others I found on web sites such as www.3dstudiomaxtutorials.com, www.tutorialized.com, www.3dtotal.com. By following those tutorials I learnt the basics of modelling, as well on touching on subjects such as lighting, cameras, materials and rendering.

After this I began work on my project. I began with constructing one of the castle walls. It seemed a logical place to start, as the castle would be the focal point of my environment. It was constructed using the box tool and then converting it to an editable poly before manipulating the vertices to give one side a slight slant. I did this to try and add some realism to the shape of the wall (as castle walls are often slanted at the front).

Next I created the battlements. These were created from cube. This was then shaped in a similar way to the wall. I then used the chamfer tool to give the edges of the shape a worn down effect. Next I pasted several copies along the length of the wall. I later found that there was an easier way to do this with greater accuracy. This was something that I would find many times during the completion of my project. I would complete a task and then later find a much easier and better way to doing it.

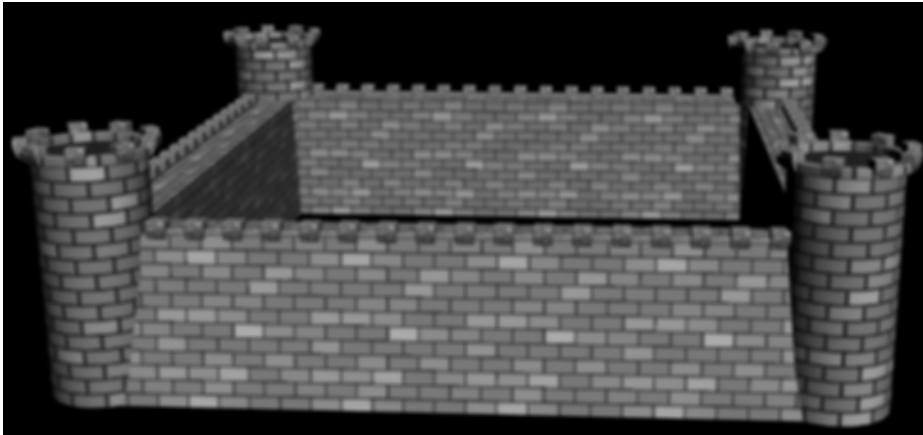
After completing the wall with battlements I moved on to creating a tower. This was completed by creating a cylinder and placing a ring on top. I then inset the battlements in to this ring.



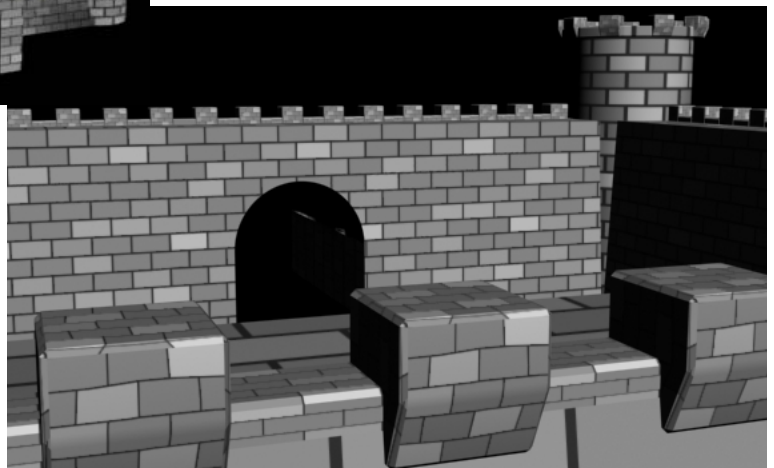
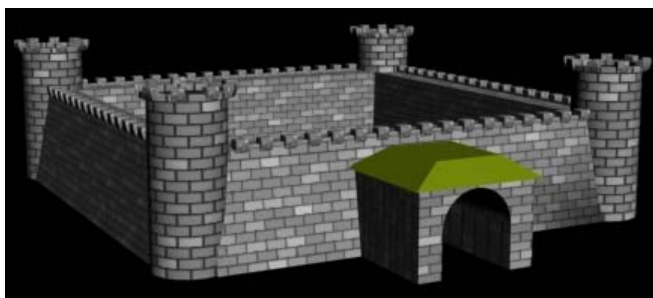
Next I duplicated what I had done to create the remaining 3 walls of the castle. At this point I wanted to try and add a material to the basic castle shape. Although according to my gant chart I was not due to start texturing until weeks 6 and 7, I decided to spend a small amount of time adding a basic texture. I chose to break away from the schedule because if I had problems adding a texture due to

the way I had constructed my objects, it would be better to find out now than after I had spend ages making objects that could not be textured.

To create the brick texture I followed a tutorial from 3dsmaxsupport.blogspot.com. This enabled me to create a basic but ok looking brick effect. I was not entirely happy with it, and had planned to go back and create a better one later on in the project, when the texturing was scheduled. It did however allow me to get a better idea of what my castle would look like.



Next I added the gate house. This was a bit tricky as I wanted to cut an arch in a cube and also through the wall. After trying different ways I merged a cylinder with a cube to make the arch shape. I then cloned the arch and used the boolean function to remove one clone from the gate house and the other clone from the wall. This cut an almost perfect arch through the gatehouse and wall. I added a roof to the gatehouse. I had planned to give this a wooden texture later on to make it look like a wooden roof. In the end however I decided to remove the roof and add more battlements around the top.



At this point I had spent about a day and a half working on my project and wanted to try my hand at a different aspect of the project. Keeping in mind that I'm building an environment and not just a castle, I decided to try and sculpt a landscape with some trees to fill it.

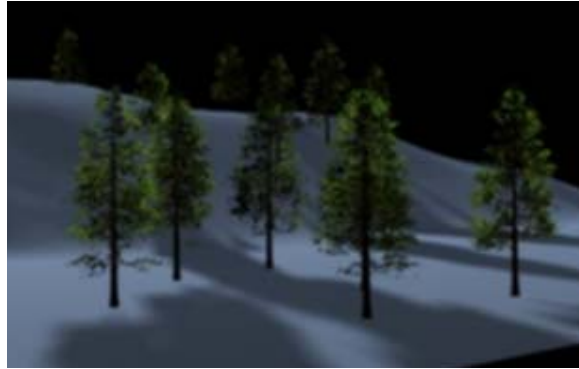
Constructing the landscape was harder than I thought. Although the process consisted of simply manipulating the vertices of a plane (whilst using soft selection for better results), getting a landscape I was happy with was time consuming.

I then did some research on how to create the best trees. After visiting several forums the best answers I found were two plugin's called Forest and natFX. These are both professional plugin's and cost upwards of £150. However Forest has a free version with limited features and natFX comes with a free 30 day trial.

After spending a few minutes using the Forest plugin I was able to come up with some interesting results. For the most part the trees looked good from a distance but lost detail close up. Also as the forest is mapped to a closed spline and has no link to the shape of the terrain, trees placed on hills tended to float in the air or be partly buried. This can, apparently, be fixed using the premium version, but I couldn't afford it. Unfortunately this meant that the Forest plugin was out of the question unless I wanted to have a perfectly flat forest.



Next I tested the natFX plugin. This gave me much nicer looking trees than the forest plugin. The down sides were that each tree had to be placed individually. This could take a long time, however I later found out about the scatter function built in to max that allows you to automatically copy an object multiple times and distribute it over another object. They also took a long time to render as they were highly detailed. You could however customize just about every part of the tree, right down to modelling the tree trunk yourself. By the time I had placed a handful of trees on the screen my computer had slowed down substantially.

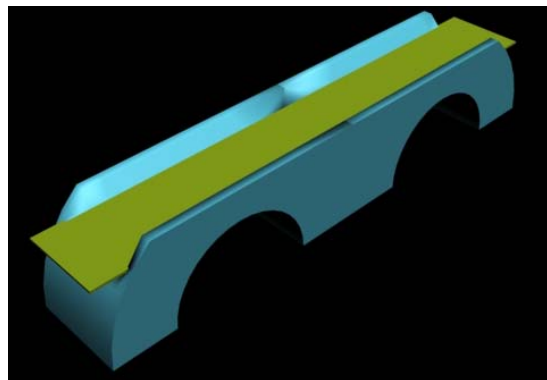
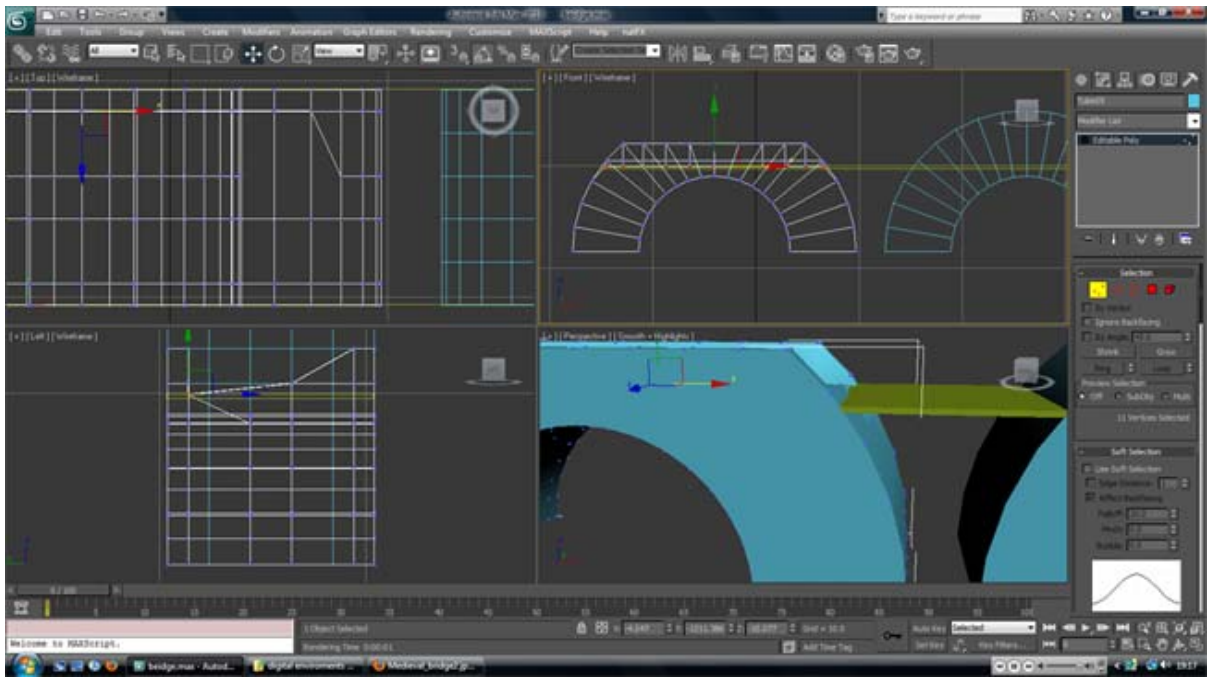


At this point I did a little more research on the subject of trees and found that there was a selection of trees pre-built in to max. This negated the use of needing expensive plugins. They also offered a good balance of quality versus render time. They were not as detailed or life like as the natFX trees, however they rendered much faster.

Once I had added the trees to my landscape using the scatter tool, I ran into a large problem. My original idea involved having two large forests and a river. However once I pressed render with this, 3ds Max said it would take an estimated 2 hours to complete a single frame. This made it impractical to use this many trees. I had to rethink my design. I decided that the best thing to do would be to scale back my design and just have one small wooded area with only 10 or so trees.

By scaling back my design I was left with a problem, my project now looked a lot less impressive. To try and counter this I decided that I would build a bridge to go over the river. It would also give the environment more of a story. Perhaps the bridge was the only safe place to cross the river and so the castle was built to defend the crossing.

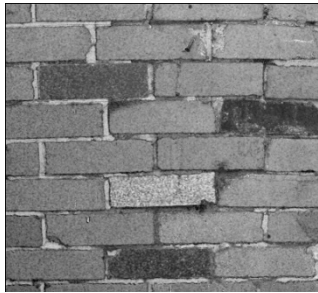
During the actual construction of the bridge I felt confident enough with 3ds Max to try and just create the bridges with no tutorials or guides to help. I did however do a little research on what medieval bridges looked like. The bridge was constructed from a long thin flat box for the road and 2 tubes that had been modified and then joined.



An example of a typical medieval bridge and my bridge



At this point I had also experimented with a grass texture. I added a bump map and a hair and fir filter to try and simulate the grass. I later decided that this wasn't such a good idea and the hair and fir just looked silly close up and took too long to render, so I replaced it with a grass texture I obtained from the internet. I also went back and redesigned the brick texture. After taking a photo of the red brick wall in my back garden, I used Photoshop to desaturate it and applied it as a texture. However, this did not look very good so I took photos of various stone walls around Plymouth. I then chose individual bricks that looked good and constructed a tileable texture in Photoshop. Once added in 3ds Max and combined with a bump map, this gave a very nice brick texture.

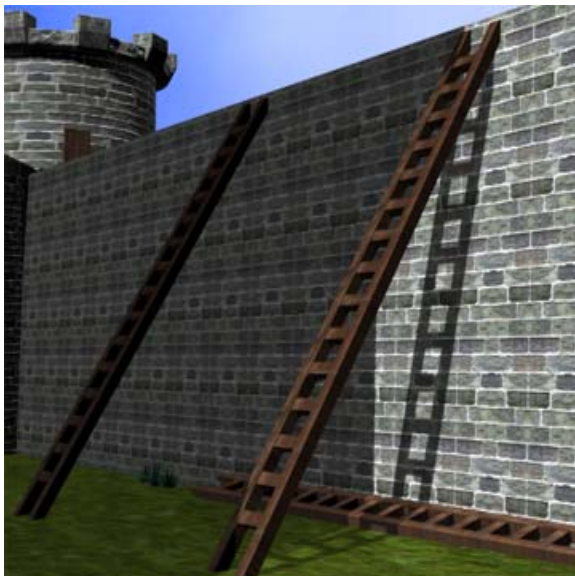


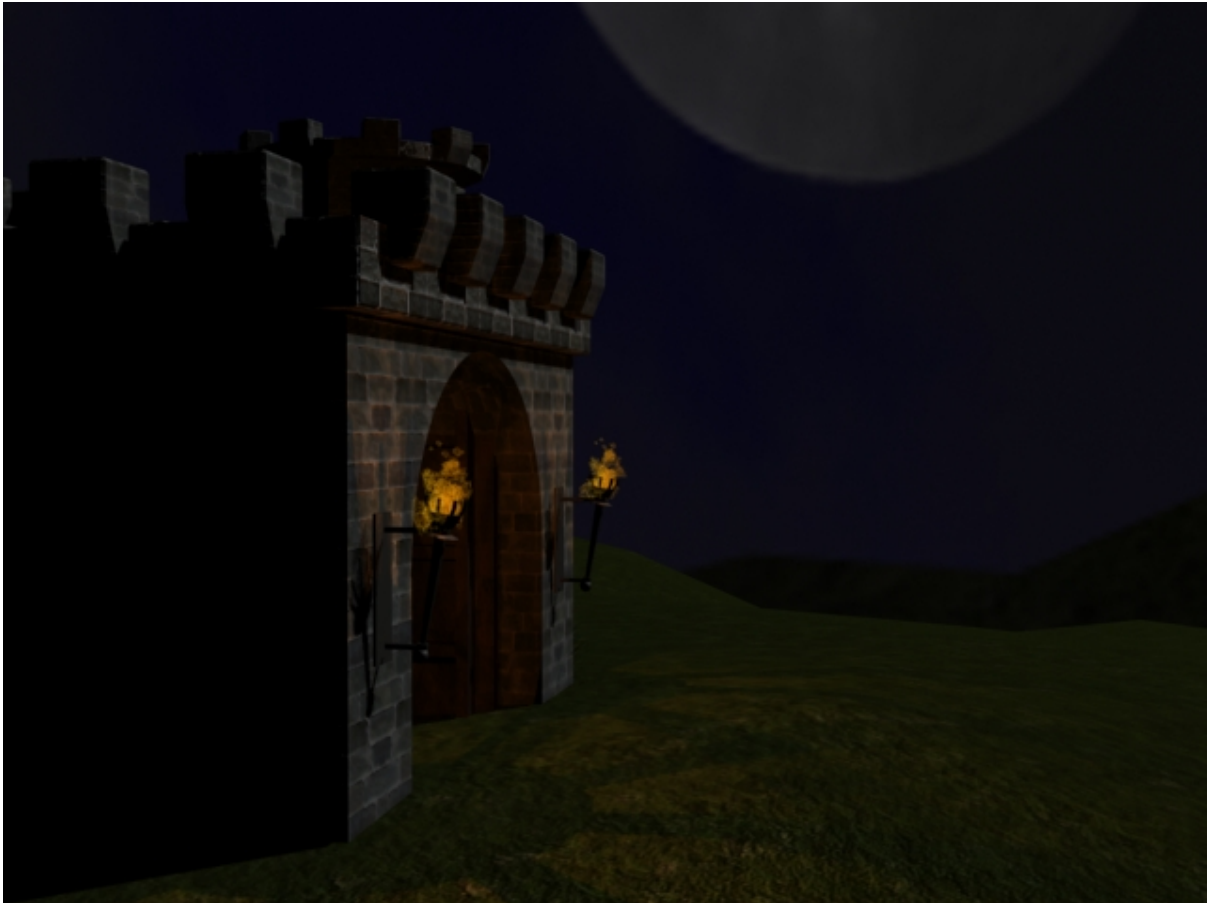
Desaturated red brick texture



Stone texture

Next I constructed a ladder to enable people to climb up to the walls of the castle. Although there would be no people in my project, I feel it is small details like this that help add to the realism. Doors were also added to the towers and the gate house. I created a pair of torches to sit outside the game house. In the final render I would use a blizzard partial effect and an orange Omni light to create fire. The lit torches look particularly good when the lighting is lowered to simulate a night-time scene.





With the modelling and texturing complete, next on my gant chart was lighting. However I had been doing this as I worked through the project. The reason for this was that I found it was much easier to take screenshots and generally get a better idea of how my work was coming together if it was properly lit. This left animation. The only animation I had in my project, apart from animating the cameras, was the main castle doors opening. This was done very quickly and easily, since I had used the doors pre built into 3ds Max and they allowed me to simply change the open angle. I also added a 'sky box' to create a panoramic background. The background itself was created in Photoshop. I used an image of a hillside I created in 3ds Max and a combination of cloud paint brushes along with a gradient fill. I also created a night-time background in a similar way.

With this done I started to animate the cameras I would use. I chose to use three separate free cameras, each showing a different aspect of the environment. Once I had completed the movement of the cameras, I began to render.

I knew the render process would take a long time, however it still took much longer than I imagined. This was mainly due to the fire effect. In my test renders I had disabled the fire to speed up the render time. However, with the fire enabled, rendering 500 frames could take up to 18 hours.

Overall I am very happy with the outcome of my project. I started with very little knowledge of 3ds Max, or how to construct objects in a 3d environment and I feel I was able to produce a high quality

project. The main part I am not happy with is the way the river meets the back ground and just stops. It would have been nicer if I'd had time to make this transition less noticeable. If I were to repeat the project, I feel I would spend less time experimenting with the building of objects, as I have learnt the realism is brought by the quality of the texture. I would also leave much more time for the rendering process. I was also disappointed with the final video I submitted, as the quality of the video was much lower than the output from 3ds Max. The reason I had to reduce the video quality was due to the large size of the video files.

References

Below is a list of websites I used during the making of my digital castle.

Tutorials and guides:

www.3dstudiomaxtutorials.com

www.tutorialized.com

www.3dtotal.com

<http://3drockstar.com>

<http://3dsmaxsupport.blogspot.com>

<http://rob-3dsmax.blogspot.com>

www.itoosoft.com

www.bionatics.com

Reference materials:

http://portfolio.chrishanrath.com/projects/xl_castle.jpg

http://themanleyhouse.com/image_galleries/castle_web.jpg

<http://visualparadox.com/wallpapers/castle800.htm>

<http://www.jurainfo.com/images/isle-of-jura-landscape-panorama-picture.jpg>

http://www.paintfrance.com/images/PFKV_bridge.jpg

<http://www.barnarts.com/Medieval%20bridge%20at%20Brassac.jpg>

http://www.dartfordarchive.org.uk/medieval/magnified/Medieval_bridge2.jpg