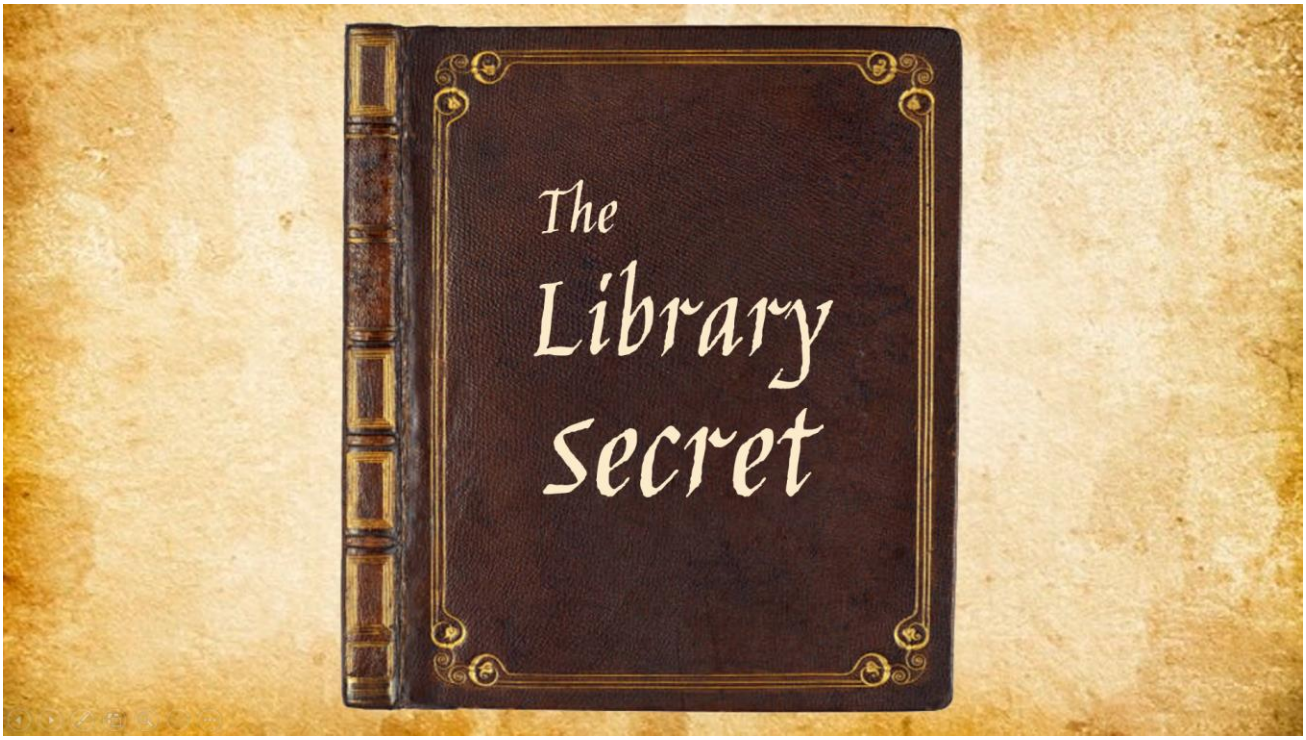
Klaudia Jeziorczak
MA Game Art

Retrospective – Module 1



Concept and Art Bible (Week 1)

The first module consisted of creating a top-down mobile game level, permitting the character to advance from a starting position to an ending position. Due to the nature of the output device for the game, there were limitations on this project such as the 300,000 polygon limit, and a 1024x1024 texture size for the assets (2048x2048 texture size for the larger assets).

The notion of a library as an environment for this module was highly influenced by the short phrase 'When in doubt, go to the library.' (Rowling 1998, p.189). This would become the narrative for the player. Libraries often connote a place of discovery and knowledge, hence being an ideal location for a great revelation within the game.

The concept for the level was documented in the art bible, establishing the environment, location, and story. The player is on a quest to search the library for a hidden scroll containing ancient spells which are vital to defeating the king. Firstly, the environment of a 17th century library was chosen to be located within castle walls. This would influence the texturing of the stone walls and wooden floors, 'when the hall was elevated to the upper story the floor was nearly always timber' (Thomas, 2009).

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Having gathered imagery of libraries, the environment drew on the key features from the Oxford library bookshelf layout, as well as the magical elements of floating books in the concept art by Gvioart (2017).

Both images incorporate a long, thin desk in front of the bookcase and a walkway in the centre of the bookshelves which were inspiring to the level.


Despite having magical elements in the game, the environment was rooted in realism.

Studying references of libraries in games, Kaer Morhen library in The Witcher 3: Wild Hunt (2015), Château Gillard library in Overwatch (2016) and the Hogwarts library from Hogwarts Legacy (2022), the key features noted were a common use of wood textures, the desaturation of colours and the use of warm lights for atmospheric effect.

The colour palette and textures chosen for this level complement the lighting. The candlelight works with the wooden textures to create warm shades of browns and oranges. Whilst the textures of the books and carpet lean towards the pinks, blues, and purples, along with the moonlight, to highlight the element of magic.

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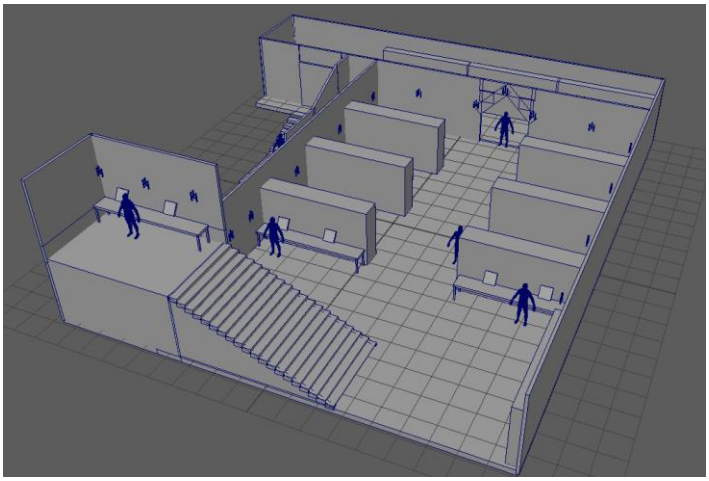
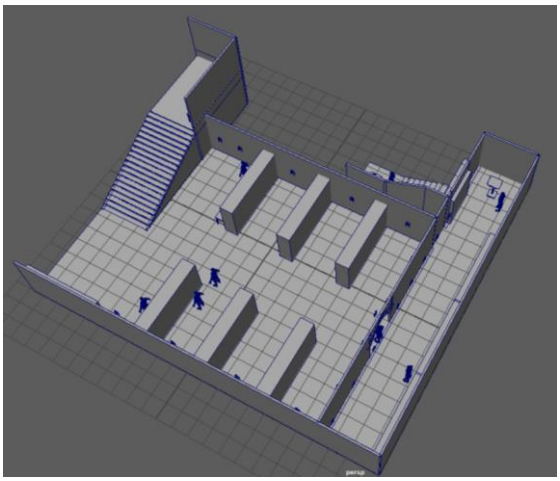
Blockout in Maya (Week 1)

An initial blockout of the level was constructed using either cubes or cylinders, with human sized references to check for proportions. The layout was made with some features in mind such as having more than one camera angle, and a moving bookcase instead of a door. The intent of the two staircases was to add to the concept of a quest and a search for the scroll.





Blockout in Unreal (Week 2)

The blockout was to be assembled in Unreal using modular pieces, ‘Modularity is a powerful tool in environment art … teams benefit from the flexibility and rapid iteration afforded by working with modular assets.’ (Bernstein 2017, p.2). Having initially not created the blockout in a modular manner, the shape of the level changed as some areas became more narrow.

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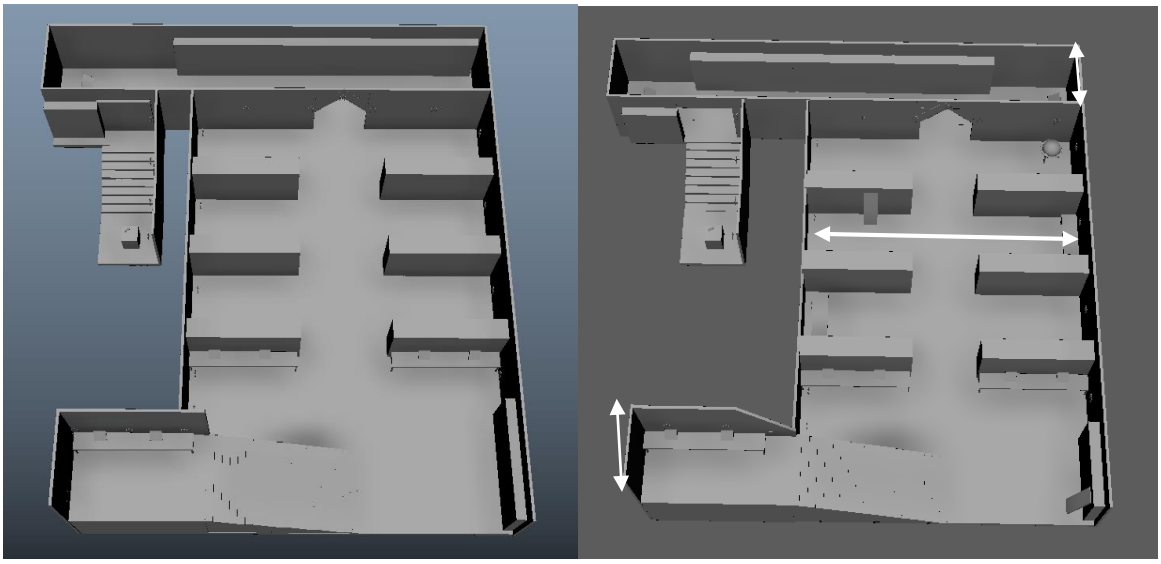
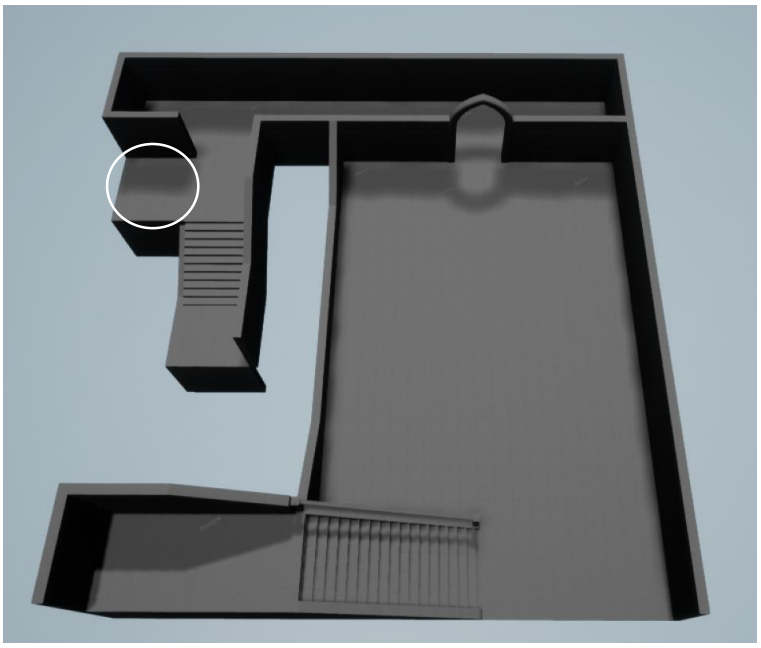


After creating the floor and wall assets in a 3x3m ratio, the level was assembled in Unreal. Here, it came to my attention that an extra floor piece would be needed in order for the bookcase to slide out.



Modelling (Week 2 and 3)

Using various tools such as loft, wedge and mirror, the assets were created with the intention of repeating the majority of them. Since one of the bookcases acted as a door, it was modelled with 3x3m dimensions, like a wall. For easy construction, the stairs and rails were also created with a 3m width.

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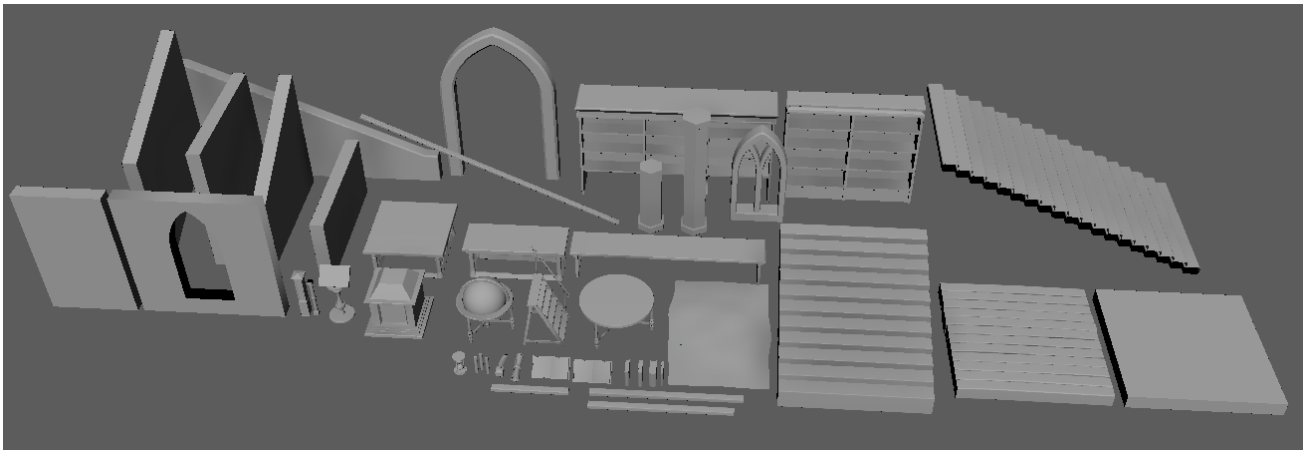
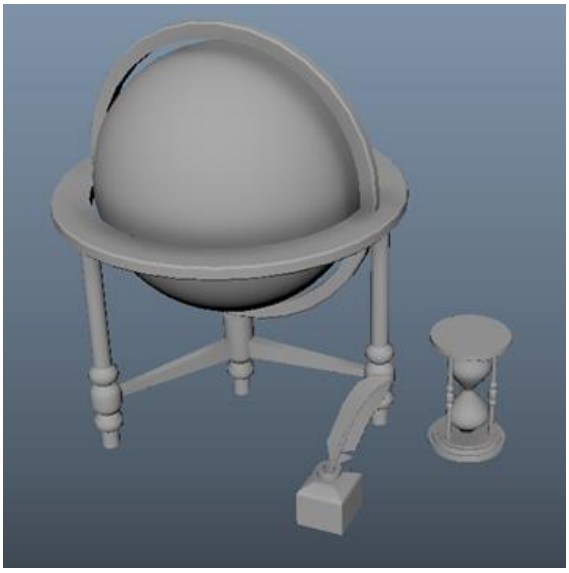
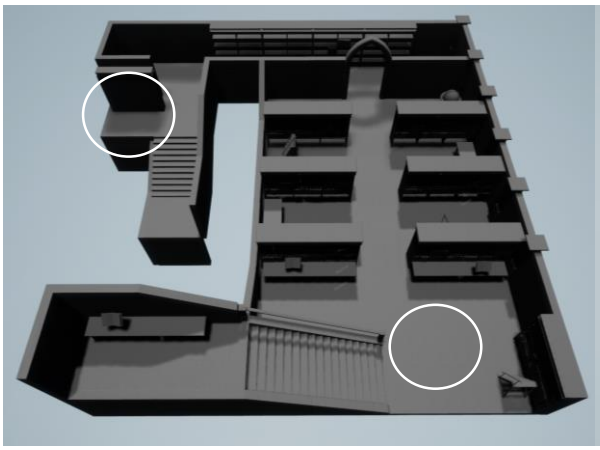


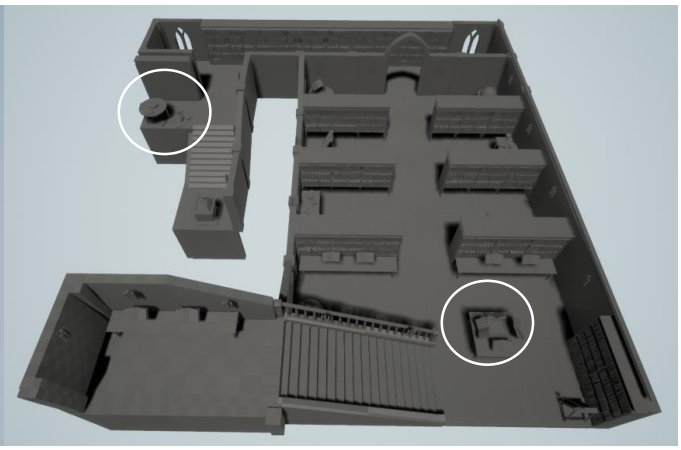
Majority of the references when modelling were taken from the art bible.



The repetition of shapes is not only a time saving factor, but it also allows for consistency in the level. Consequently, the legs used in the globe were also used in the round table and the sand timer. The square and small rectangular tables were identical aside from their tabletop shape. The outline of the window was made from the archway, just like the inner frame.

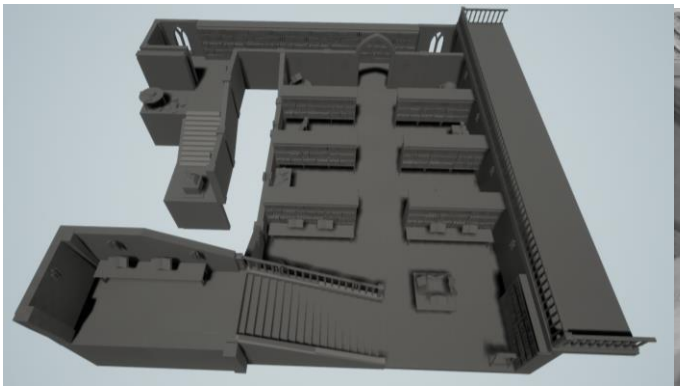
Once most of the props were brought into unreal, it came to my attention that there were empty gaps in the scene.



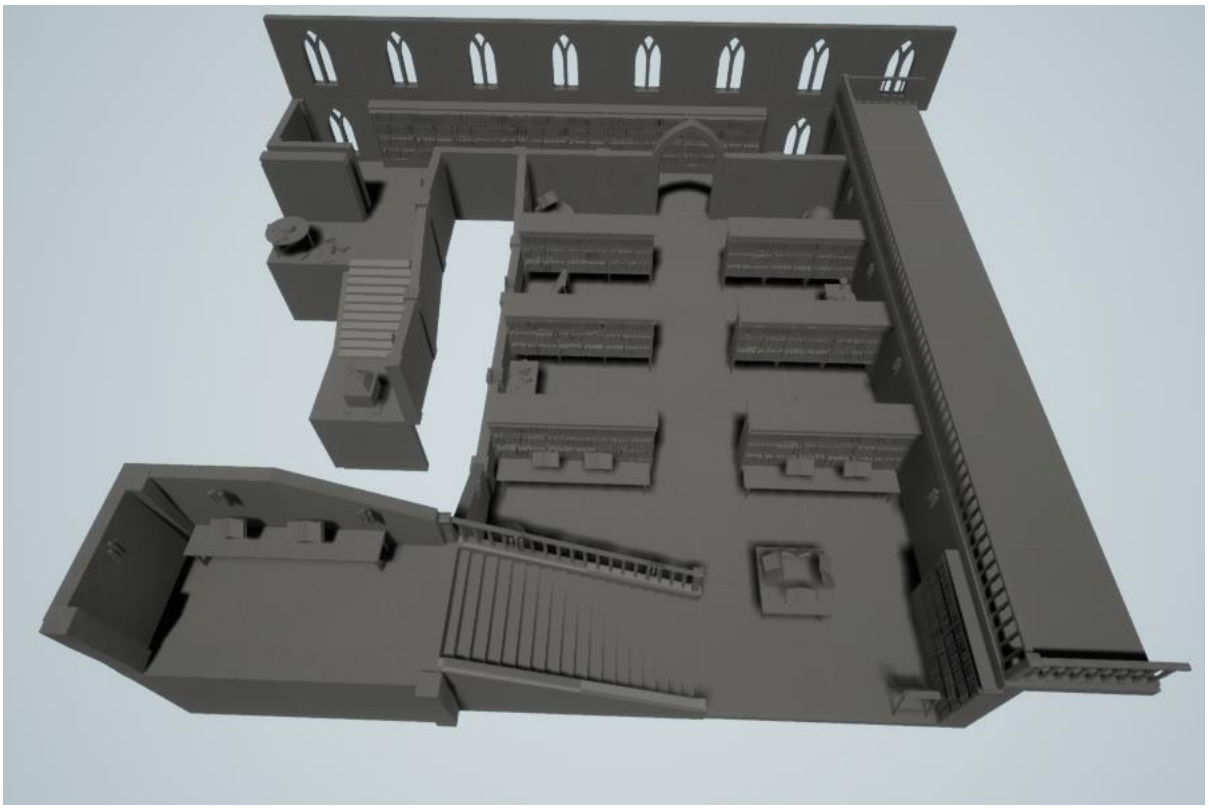


Here a choice was made to create a square table, filling the gap at the bottom of the first staircase. The empty space next to the moving bookcase opened two possibilities: either creating a shorter floor piece or filling the space with some props. The first option would require a new mesh for the floor, and likely for another wall, which would also cause an unequal distance between the pillars. Hence, the latter choice was made, and the round table was duplicated, along with some books to fill the space.

When previewing the environment, there was still something noticeably missing, the shape of the level felt like a box. The decision of adding some railing on the side would mean that no new meshes would need to be created but would result in a false sense of extra space. This ties into the art bible, with the location of the level being within a castle, and therefore being part of a much larger space. Once in game mode, the player would not see further than the railing and therefore no other details would need to be added there.



Taking another look at the level, the window walls were duplicated to add extra height, anchoring the sense of a larger space as well as allowing for more moonlight to fill the level.



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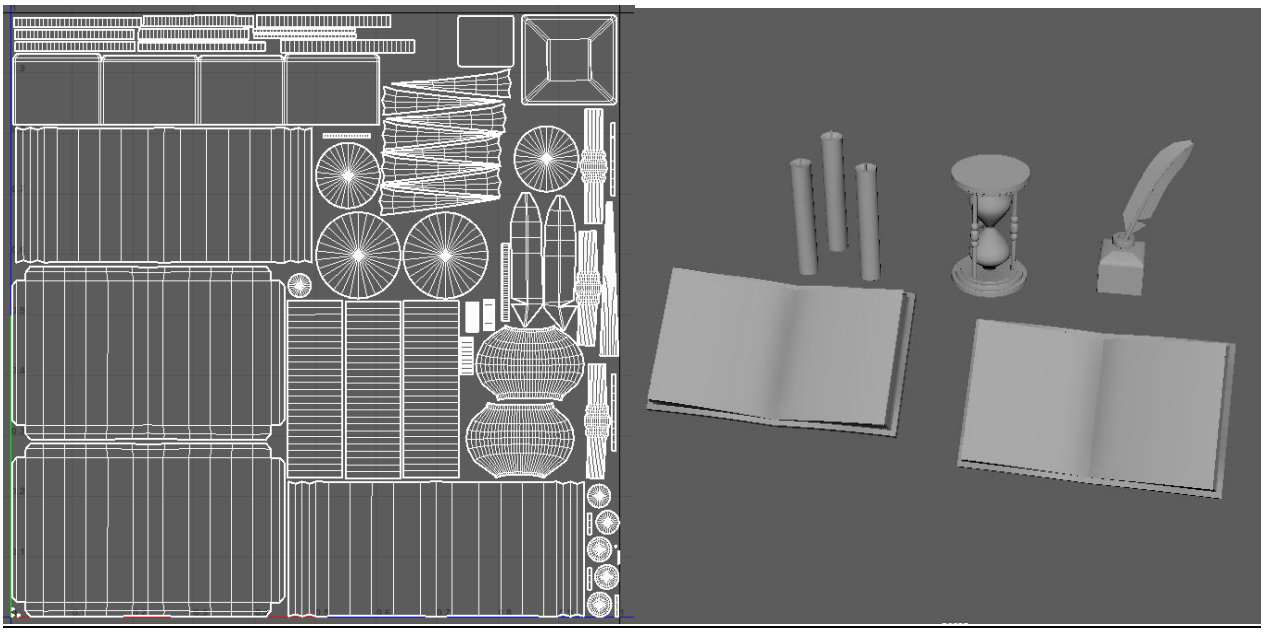
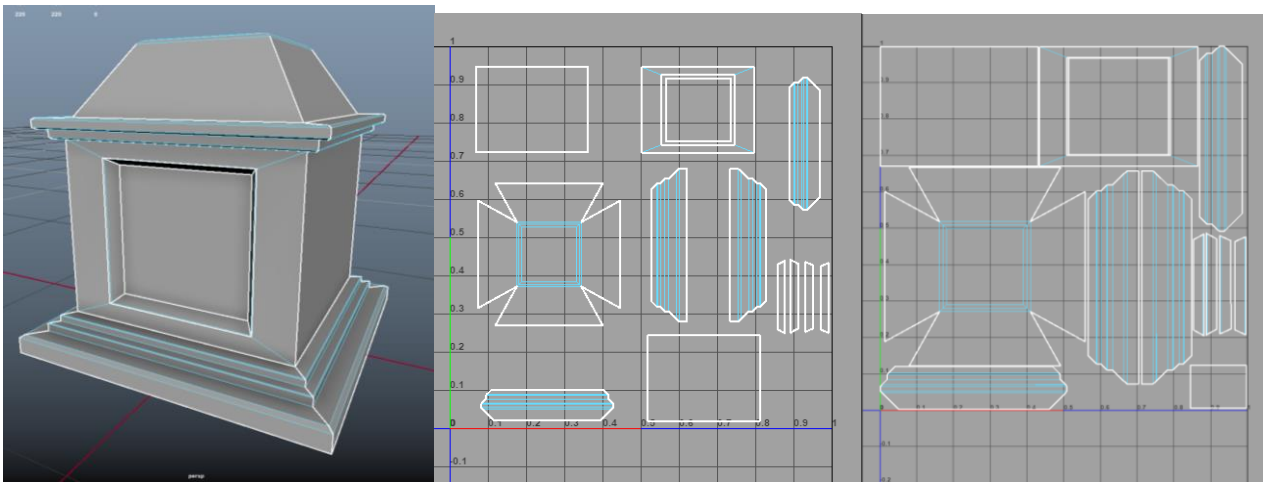
UV Unwrapping (Week 3)

Initially some challenges were met by stacking similar UV shells, when baked in Substance painter the occlusion map did not have the desired effect. It was also very limiting when texturing.

Having rearranged the UV shells, fewer meshes were now able to fit on the same texture map. Once the texal density had been set to 3.4133 (to fit with the 3x3m ratio), there were still many gaps. Here the decisions were made to enlarge UV shells accordingly to make maximum use of the texture space. Since these props were small, increasing their UV shells also meant that when painted, the meshes would be less pixelated.



Similarly, the texture space was optimised for other objects such as the stone podium. Here, the back face which would not be seen was reduced in size to make maximum space for the main UV shells.



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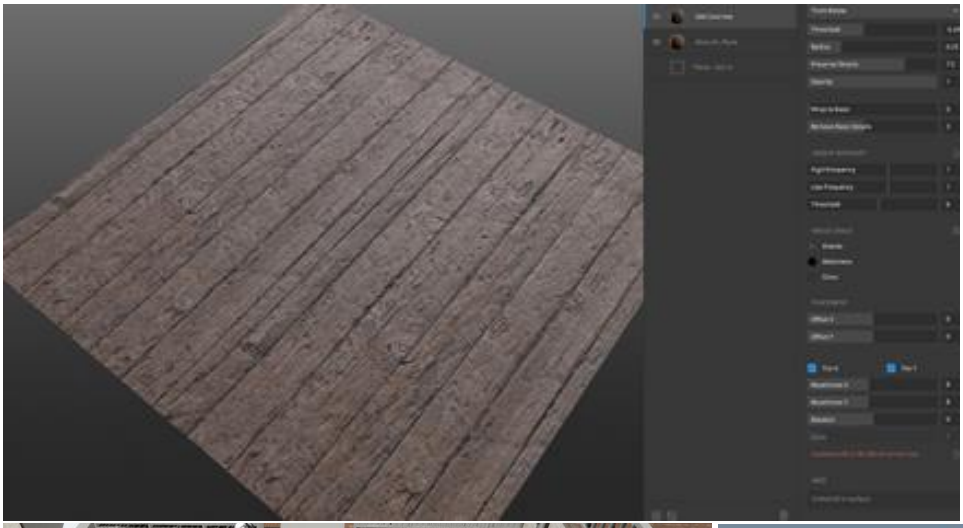
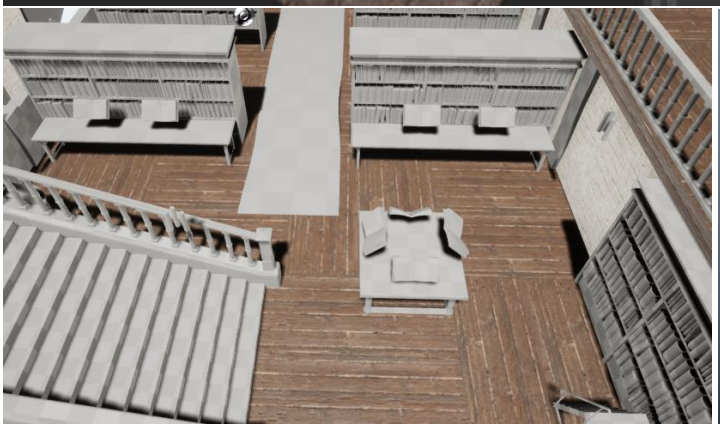
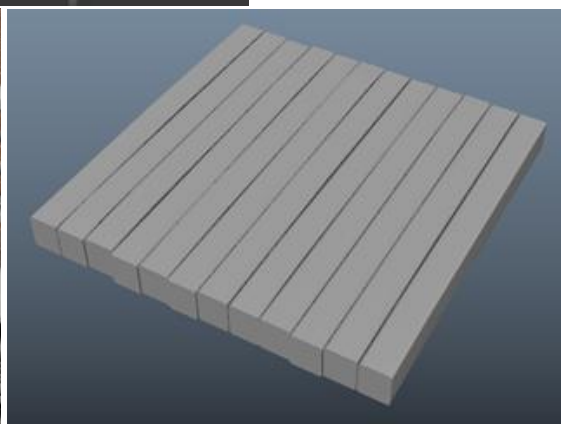
Textures (week 4 and 5)

Having combined two textures in Quixel Mixer, and adjusted necessary settings, the floorboard textures were exported. Yet, in order to achieve a higher level of realism, the floor pieces were modelled again in Maya, this time as separate wood planks.







Apart from the seamless floor textures created in Quixel Mixer, the remainder were brought from Substance Painter. Material instances were used because they allow for more control over the material, allowing for real time changes within the environment. This also means the material can be visualised in the appropriate lighting.

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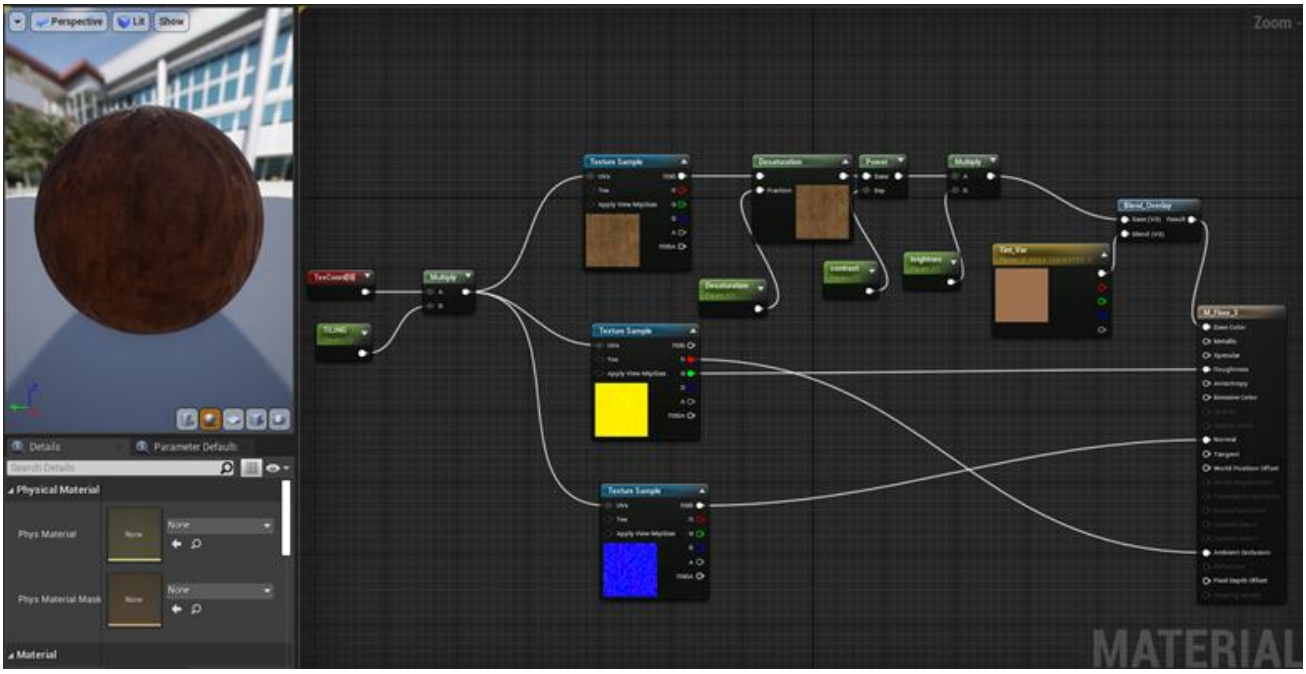
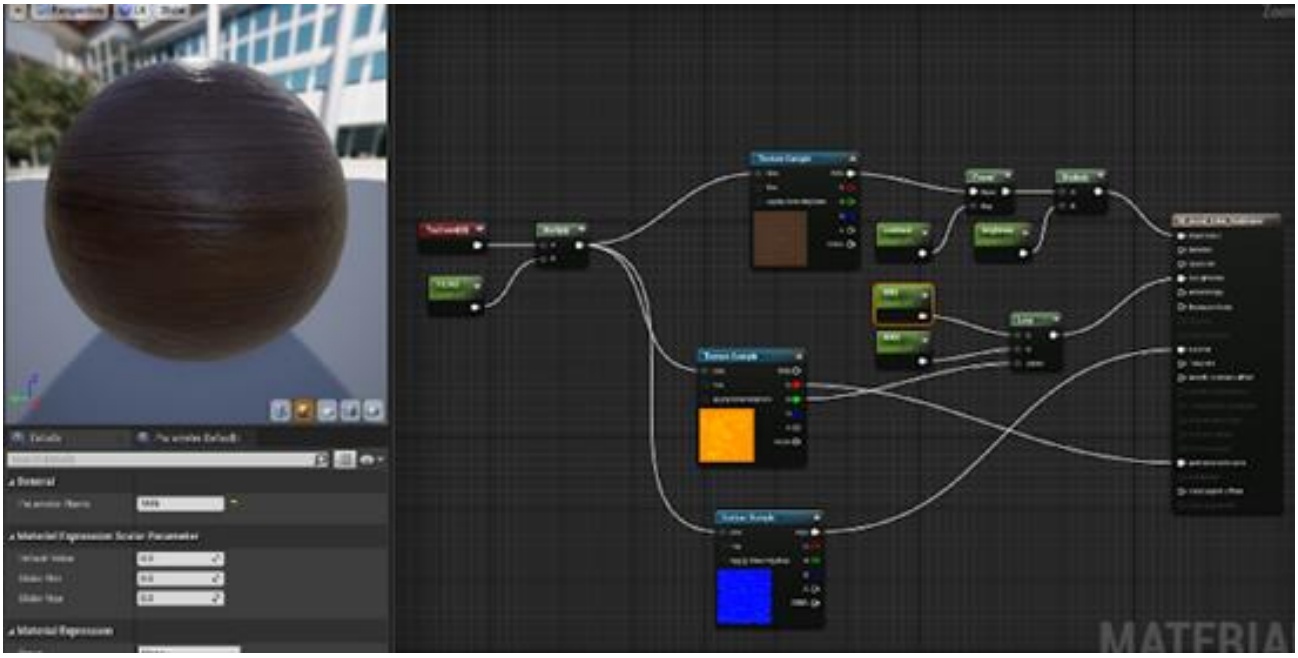


Different materials required different changes, therefore sometimes the base colour was adjusted, other times the roughness.



Texturing in Substance Painter entailed working with multiple layers in order to build up the textures. For example, the books were initially textured with a leather material and base colour, the covers were projected, and then height normals were added as well as hints of dirt.

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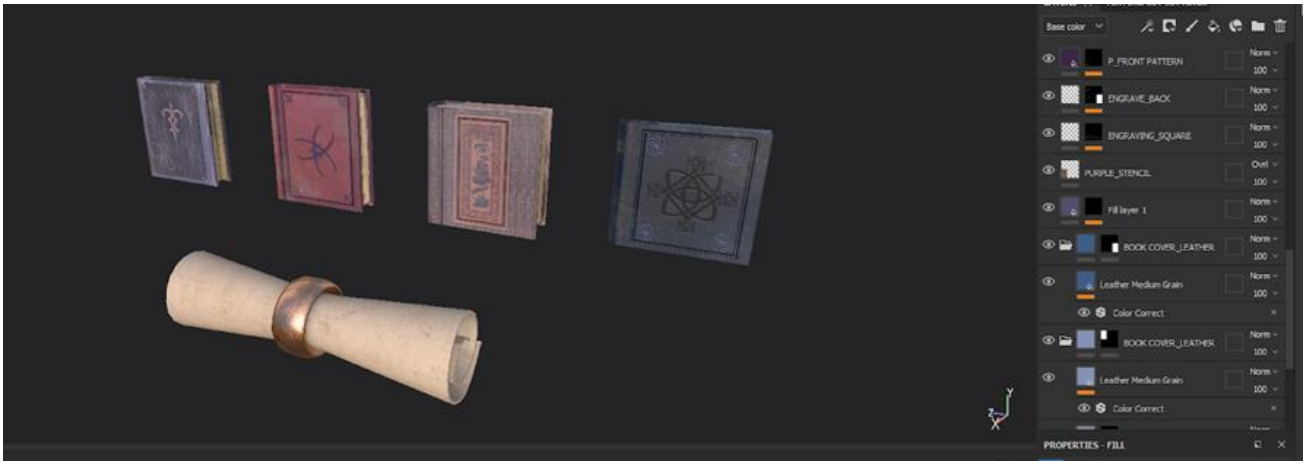
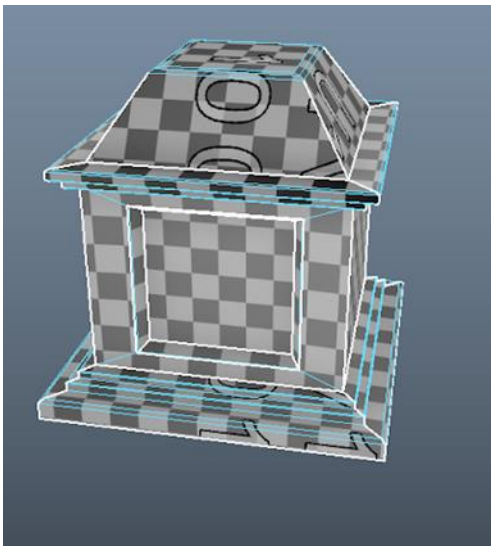


The stone podium was found at the end of the level demanded for signs of old age and edge wear. This was accomplished through the use of layering multiple grunge and concrete wear masks on top of the curvature map. Some masks were painted away, some colour variation added, until a desired effect was achieved.



In order to break up the repetition of the floor pattern, as well as add variation to the bookcases, a mixture of dirt decals were used. To save texture space, they were placed on the same texture, on different channels in

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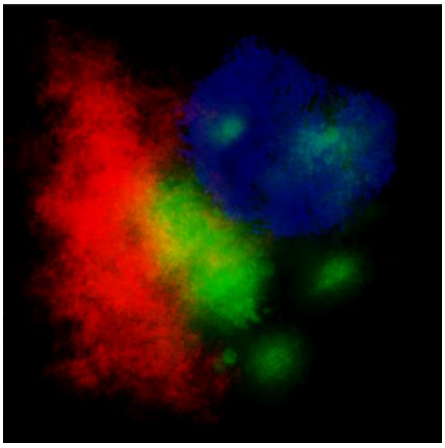
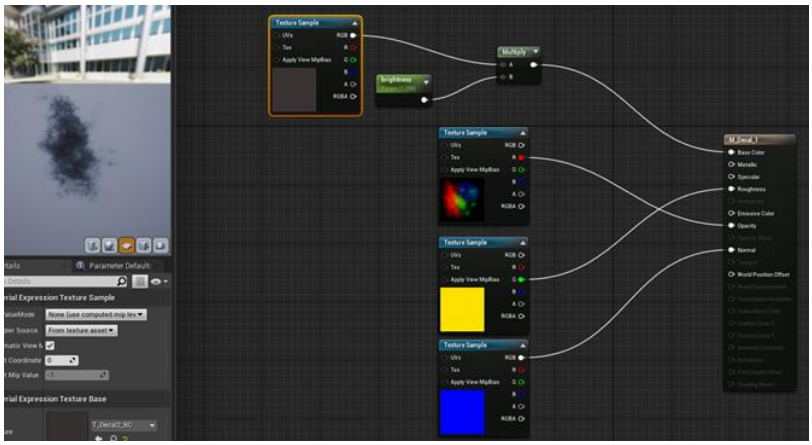
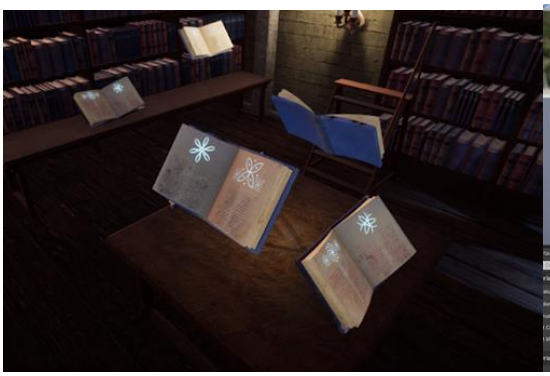
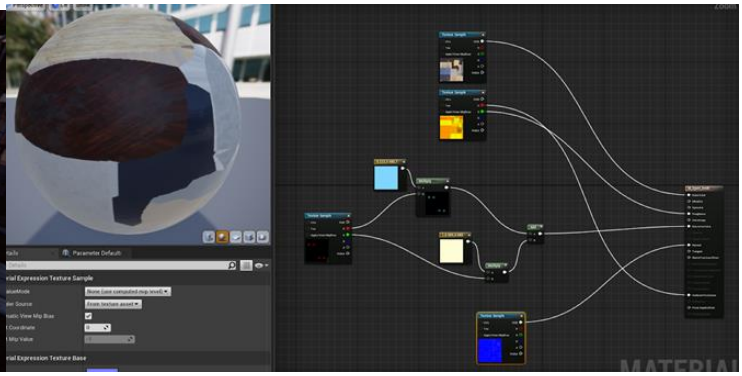
Photoshop. Again, any further adjustments such as the brightness were adjusted inside of Unreal to view the changes in real time.

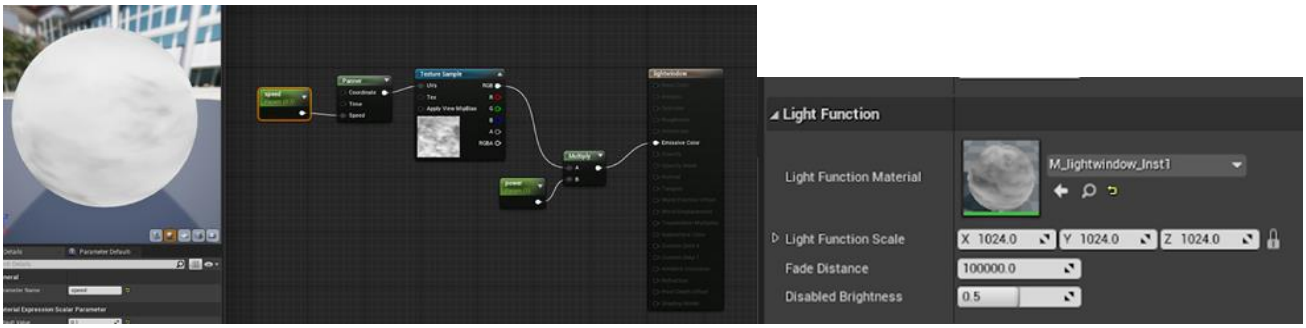



The magical element in this project relied on the use of emissive materials. Having masked the required areas, such as candle tops or areas on the open books and globe, emissive materials of blue or yellow were added.

Lighting (Week 5)

A first light pass was made using point lights for the candlelight and spotlights for the moonlight. The spotlights were set to a blue hue and a shader of a panning alpha was added to give a magical effect whilst allowing for the light to be stationary. Initially a blue spotlight was added over the table of books, as the books were textured, this took away from the emissive effect and the light was changed to a lower point light. In order to differentiate the final object, the scroll, a spotlight of a purple hue was fixed.



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The light and shadows cast in the archway and the final room were particularly appealing. However, taking a closer look, the moonlight was too bright. The attenuation radius was reaching past the edge of the scene, and hot spots were displaying near the window. Once the attenuation radius was lowered, this also fixed the light bleeding in the corners of the walls.

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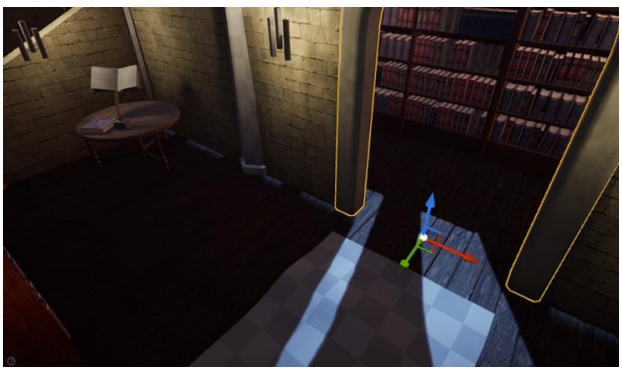
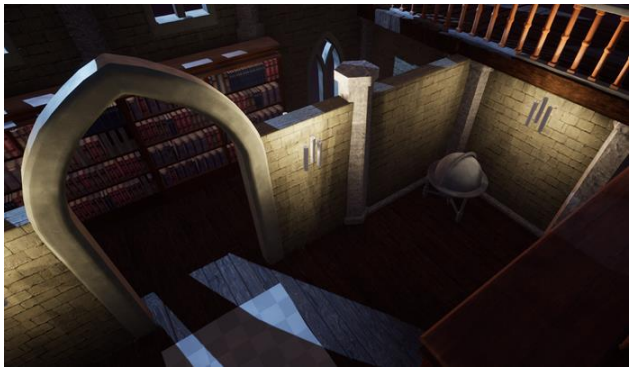
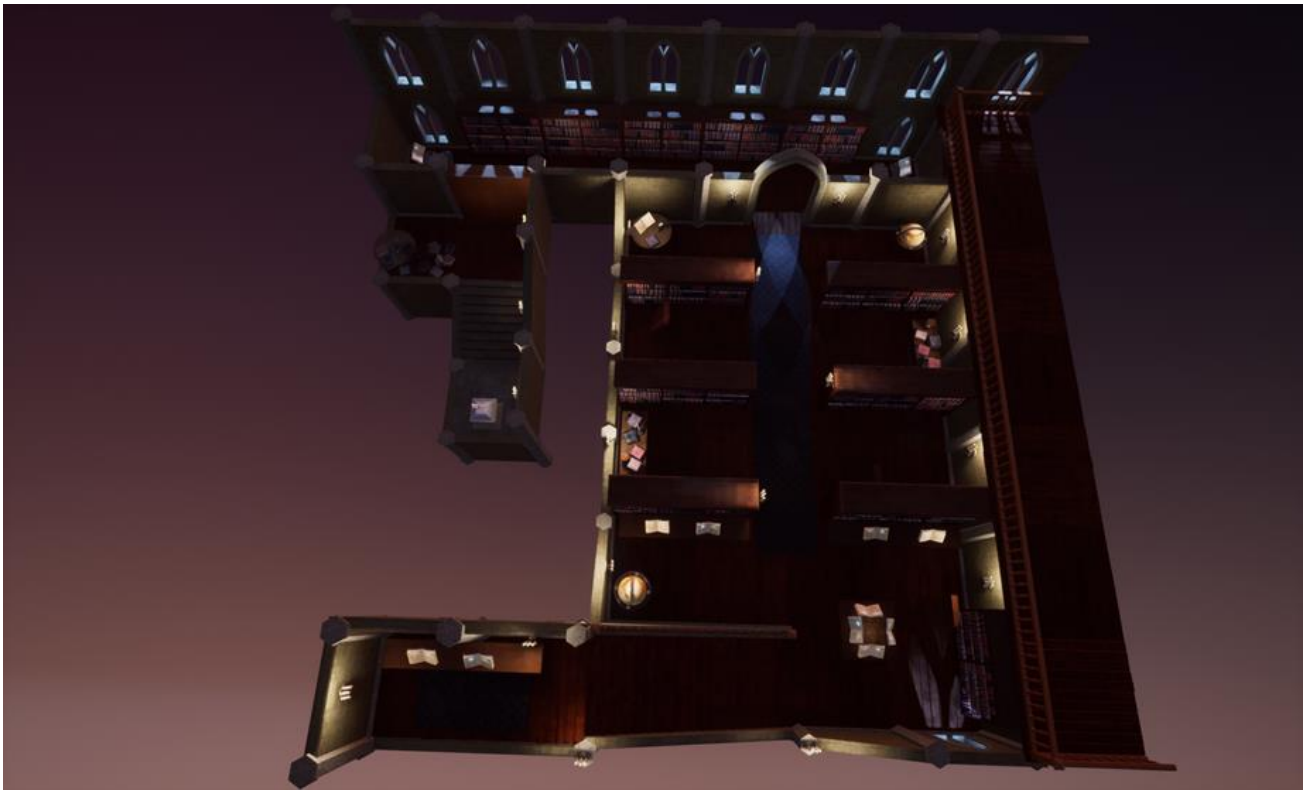



There was an early idea during this project to have floating candles, however after consideration, this idea was abandoned as not only did the lights need to be baked, there were already floating books in the scene and the movement of the candles would be unnecessary.

Some final adjustments consisted of the candle lights being lowered to fit on the candle holders, the spotlights being adjusted to cast a symmetrical shape in the archway, as well as there being an addition of another window near the start of the level.



Blueprints (Week 5 and 6)

Before creating any blueprints for the camera, the depth of field was adapted to make sure the player could not see past the railing.

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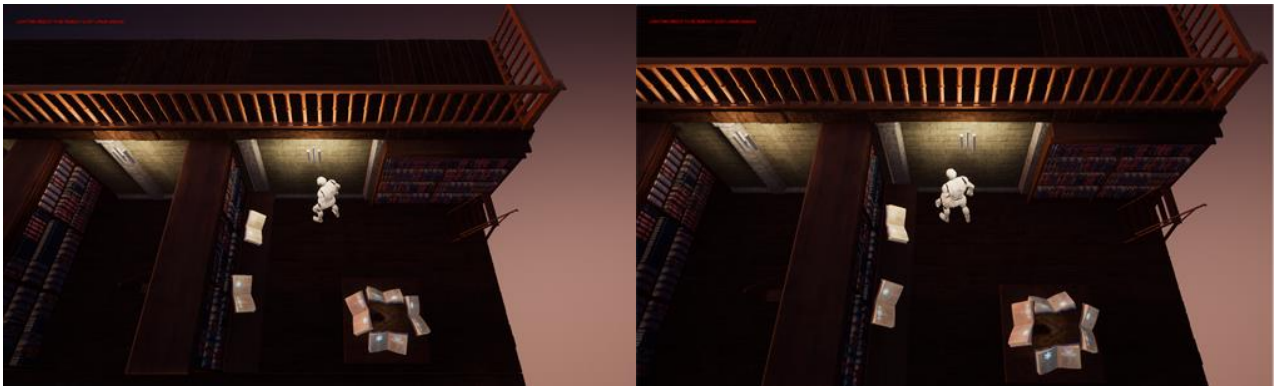

The first camera was set up to start at the beginning of the game, whilst two collision boxes were added at the bottom of the staircase to switch this camera off, or back on if the player needed to move up the stairs again. Originally the two collision boxes were too close together, causing some problems with the switching, but moving the boxes further apart fixed this.

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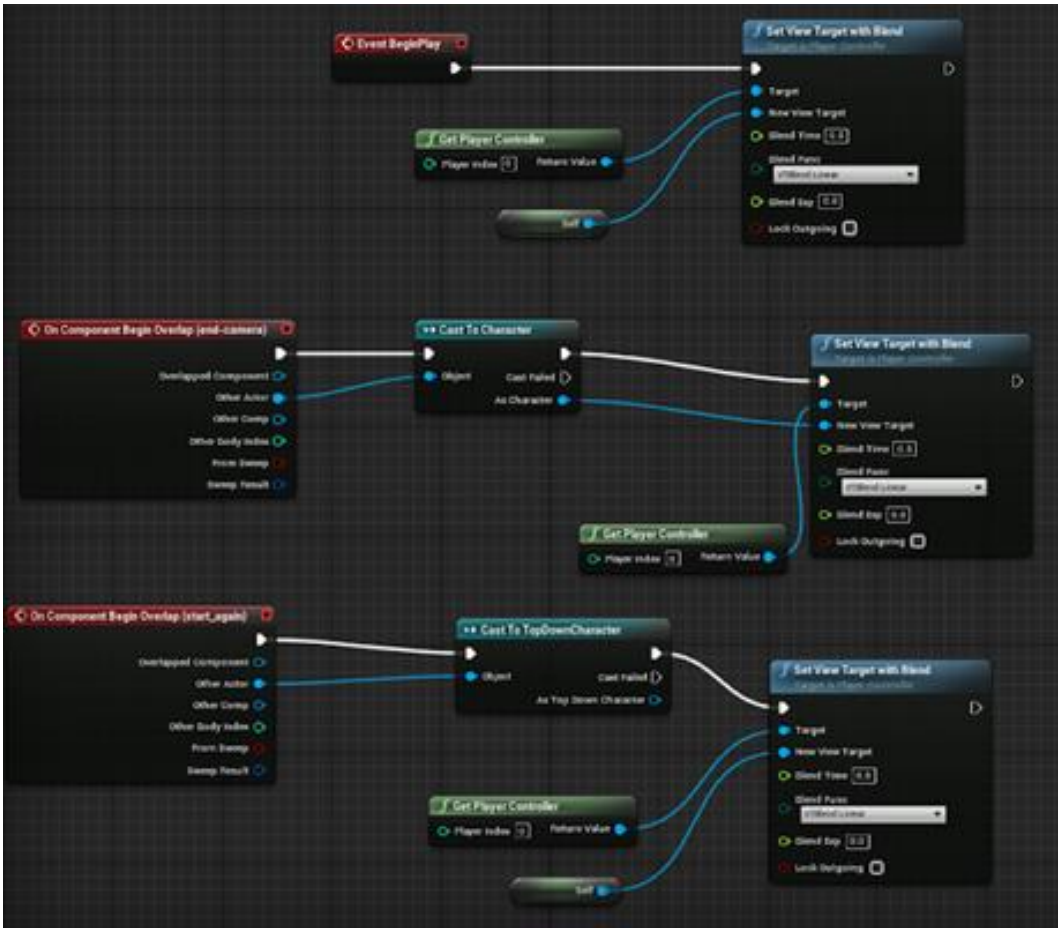

A second camera blueprint was added, this time for the last scene in order to view the final object in more detail.

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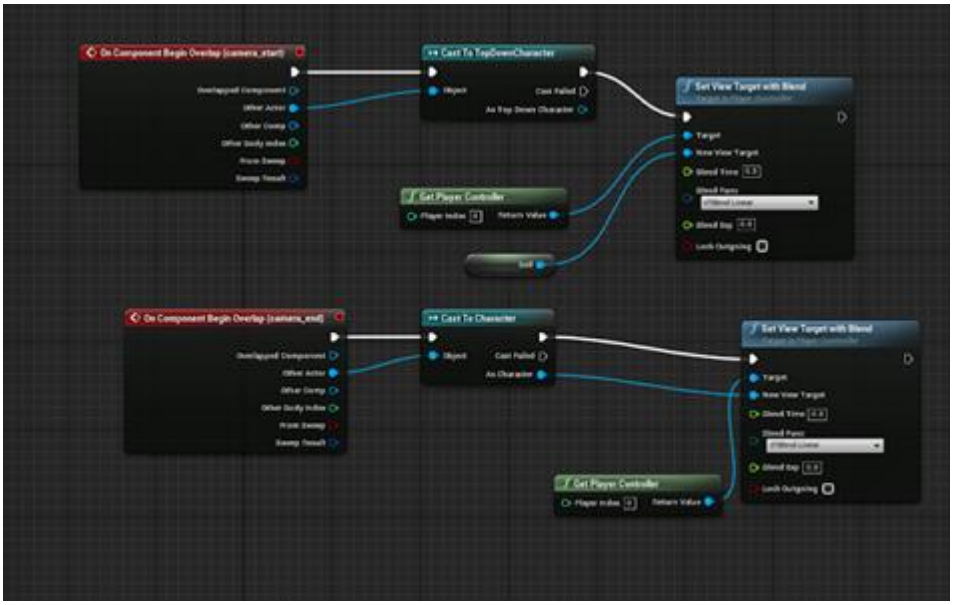

To fulfill the initial concept of secrecy, a blueprint of a moving bookcase was made. Having arranged the books on the bookcase in Maya, the single mesh was brought into Unreal with two materials so that the objects could be textured accordingly. The blueprint needed two timelines for the two movements, a slide backwards and to the side. The timeline lengths were adjusted accordingly to achieve the sense of the same speed in both of the movements.

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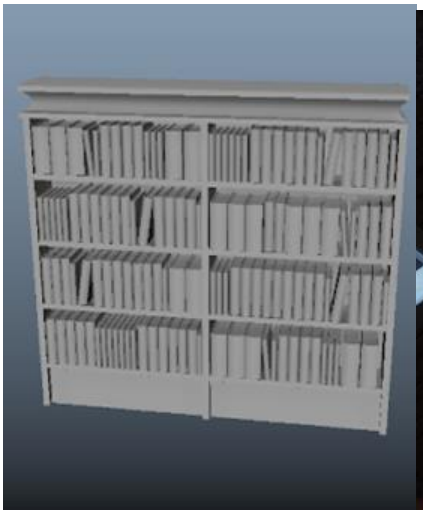

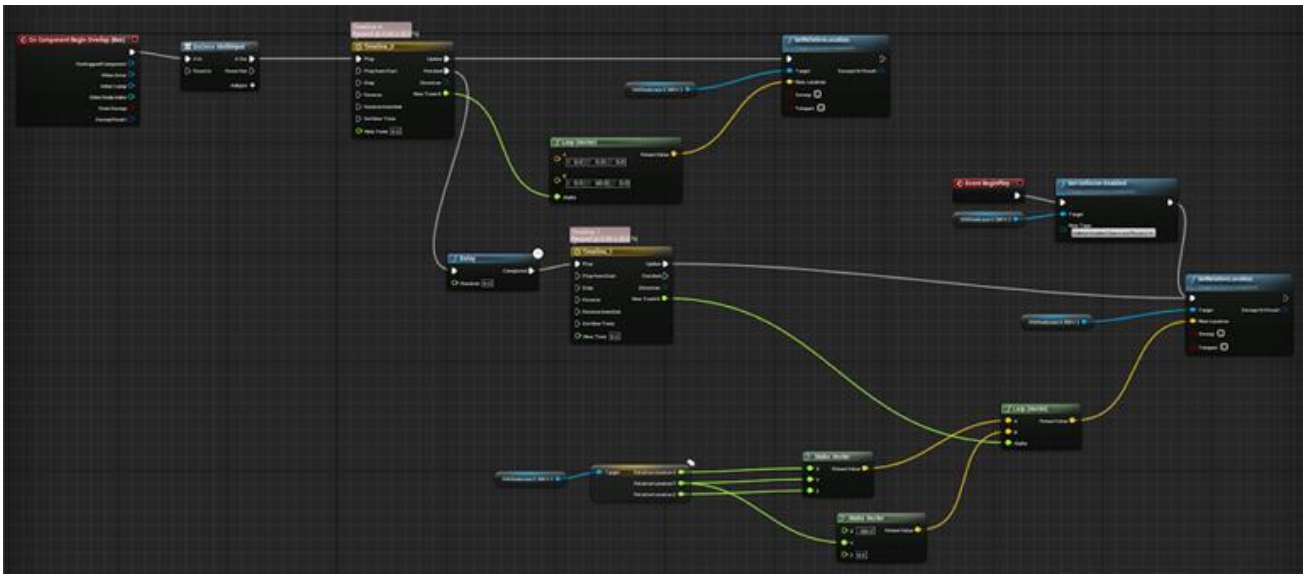

Final Adjustments (Week 6)

Animation was added to the books, scroll and magical effects. The animations were created in Maya and brought into Unreal. To achieve the magical effect, low poly spheres were animated to either spin with the scroll, or move in and out of the books. An emissive material was added in Unreal, and the effects were positioned accordingly.

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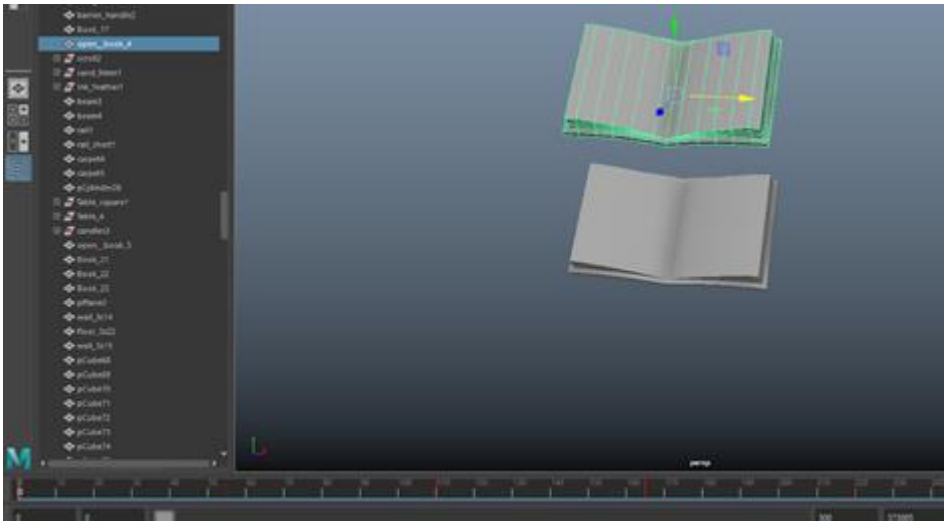

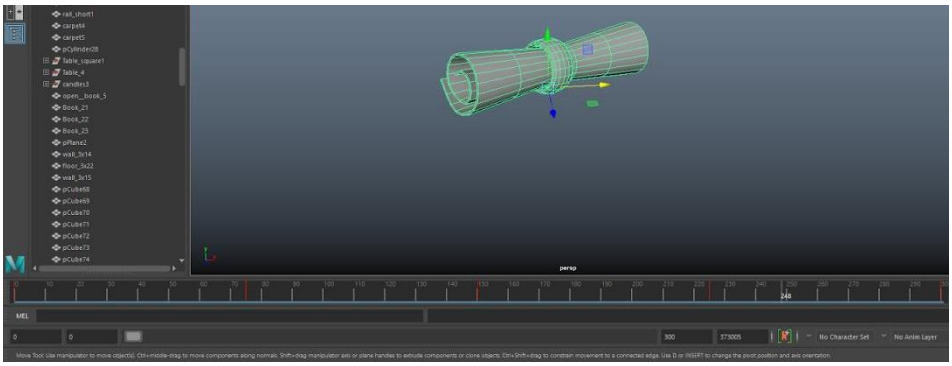

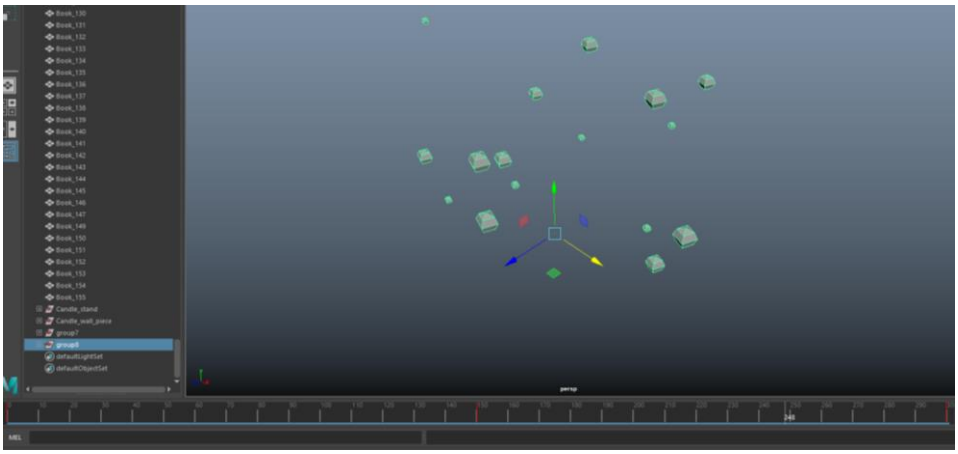

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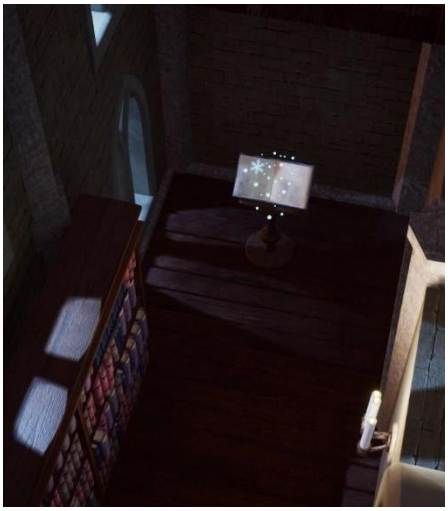


Having had some time left, the scene was analysed again for any final corrections. This included adding more decals and rearranging the table with the books at the bottom of the first staircase. Having all the books floating seemed too repetitive and therefore some closed books added more realism to the scene. These changes, although small, had a big impact on the overall vision of the level.

Conclusion

Having completed the level, I am satisfied with the final result. Because of my time management, I was able to spend some time tweaking and making small changes which highly benefited the level. Being particularly pleased with the lighting, I believe it fulfilled my vision from the art bible. The desaturation of colours also meant that the props looked realistic, as if they were all part of the same environment. I am happy with the way my blockout changed throughout this process to create a more interesting overall shape, and fill the empty spaces in the scene.

Although having modelled before in 3DsMax, I have learned the importance of working with modular pieces, specifically when it comes to games. Cleaning up my geometry was also not something I have done before but has become an important aspect of my modelling process. I also have a much deeper understanding of UV unwrapping and texal density.

In my future projects, I would like to improve texturing. Viewing more reference images would help finding the subtle imperfections in surfaces which add to the realism of the textures.

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