Character and Set Design

Coursework 1: Interior Reconstruction

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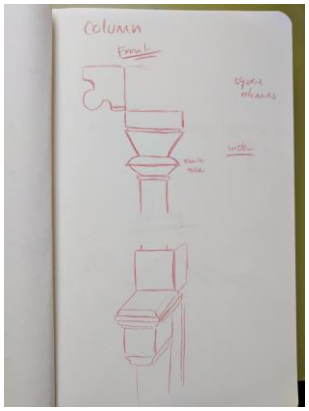
Clifton Arcade

In the heart of Clifton Village lies Clifton Arcade, a Victorian era shopping centre comprising of boutique stores on its ground floor and offices on its second. A popular spot amongst locals, I stumbled upon the location one day whilst exploring Bristol, and was struck by the circular design on the rear wall - big enough to be seen from the other end of the Arcade, and bold enough that it stuck with me. Hence, when asked to reconstruct an interior, my first thought was of the Arcade.



I travelled there to take some preliminary photos which can be found throughout this report. I also tried to sketch some of the architecture, paying attention to the proportions of different objects to each other and the building itself, but quickly discovered that these were very time inefficient and inaccurate. I found myself somewhat overwhelmed by the number of components in the Arcade; from columns to windows to decorative railings, there were lots of different features and was used a number of times throughout the building. Thus I also made a floorplan, noting the numbers of various items in relation to the columns between each shop. I found this to be an incredibly useful document to refer to during my construction as while the Arcade looked symmetrical there were small differences between the left and right sides. My floorplan, plus an initial sketch of a column, are shown right.

It was then time to begin modelling. I made a note of all of the components I had seen, including the number of them and their locations in the building. I initially decided to model items individually using reference photos and then combine these into the full model as each was made. About halfway through the project I changed to modelling things within the model itself, in order to easily get the right relative dimensions, as I had found that I had sometimes been making objects much too small or large, meaning it could be hard to re-scale them.

I used a variety of modelling different techniques in this project, trying to experiment with everything that had been taught in lectures and that I had found in tutorials online. I found a way to use almost every practice covered, but not all - one such example is the Birail tool, which I tested but found to be more complicated than necessary as anything I could use it for I could also model wit simpler methods.

The techniques I used were:

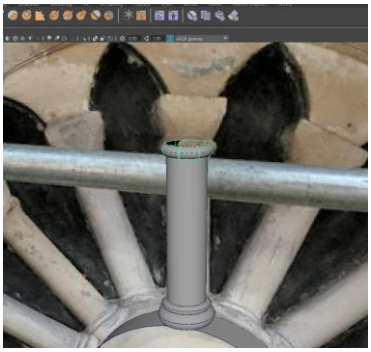
- Importing image planes for reference images
- Creating NURB primitives
- Creating polygon primitives
- Creating curves in a variety of ways, including edit point curves and arc curves
- Moving, rotating and scaling objects
- Freezing transformations
- Centring and relocating pivots

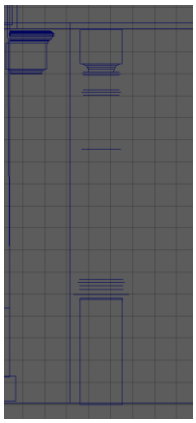
- Snapping to grid lines and vertices
- Converting NURB surfaces to polygons
- Boolean operations, mainly union and difference
- Combining and separating polygonal meshes
- Adding divisions and using the multicut tool
- Bevelling and Bevel Plus
- Extruding faces and edges
- Duplicating objects
- Using the wedge tool
- Attaching and detaching curves
- Offsetting curves
- Reversing the direction of curves and NURB surfaces
- Lofting, revolving and making planes from NURBs
- Soft sculpting

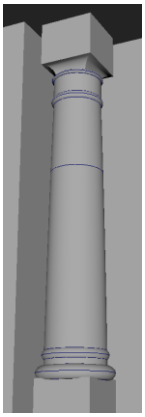
I also tried to maintain order in my outliner as I quickly had a large number of objects and found it hard to keep track of everything. Whilst I used some techniques on almost every object, for example scaling and duplicating, there were some techniques I used for specific reasons.

Loft

A simple technique I used was lofting curves. This was commonly used to create columns as it allowed me to create rounded details with exact proportions as I pleased, and allowed me to edit these by editing the profile curves.

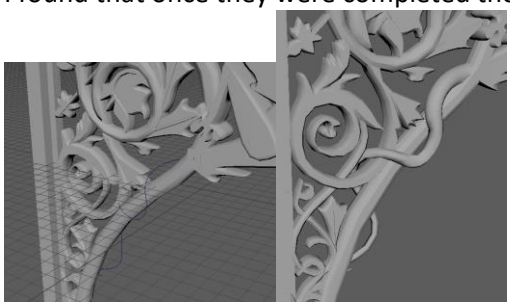


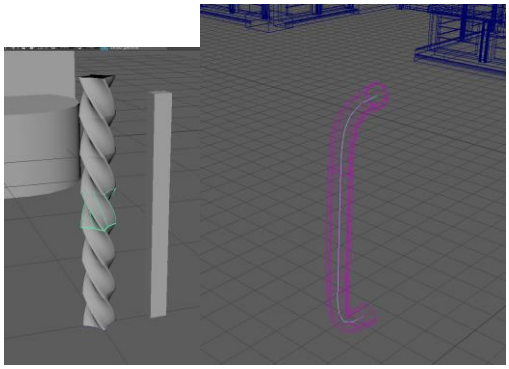




Extrude

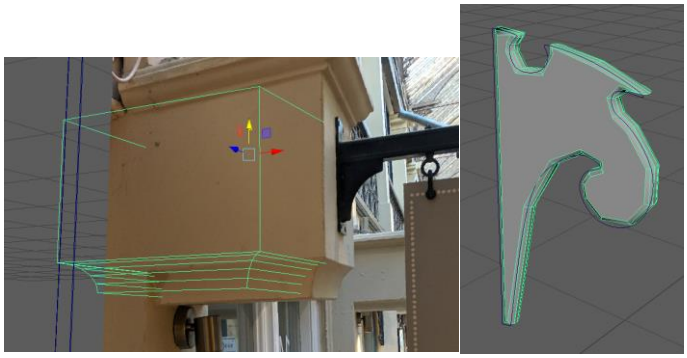
I extruded a number of objects, but the most interesting were the 3-Dimensional extrudes used for the staircase bannister and the ornamental dragon design. The latter featured a dragon with its tail wrapped around the main object. Whilst I found it hard to create the curves for these extrude paths, I found that once they were completed these looked very well-made.





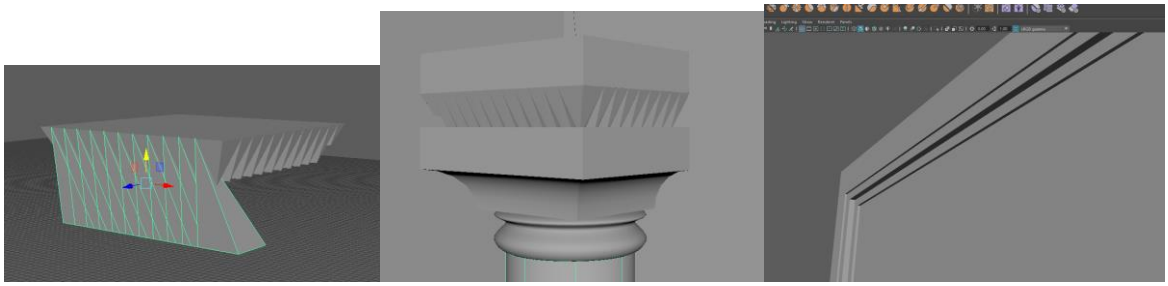
Bevel

I used bevelling extensively throughout, notably for the main columns and the ornamental railings. After a long time trying to figure out how to translate curves into 3D objects, I discovered that Bevel Plus was the perfect tool for the job.



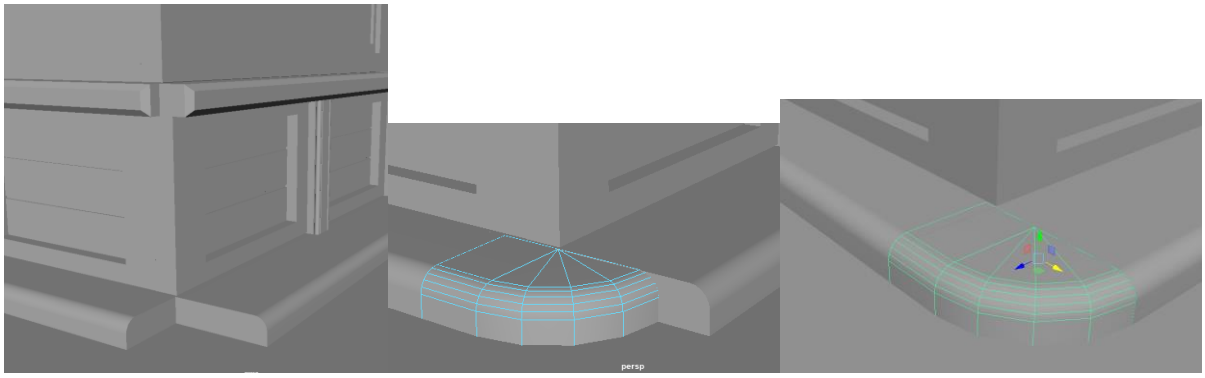
Boolean Operations

I found Boolean operations to be an indispensable function. I mainly used union to join polygonal meshes whilst removing the unnecessary inner faces, and difference to cut away from objects, as shown below in the detail of a column. This felt like sculpting and came much more naturally to me than using the intersection operation. I also found it was often quicker to use difference to create, for example, a door frame – an alternative method would be to join three cubes together, but I could get the desired effect using just two and their Boolean differences.



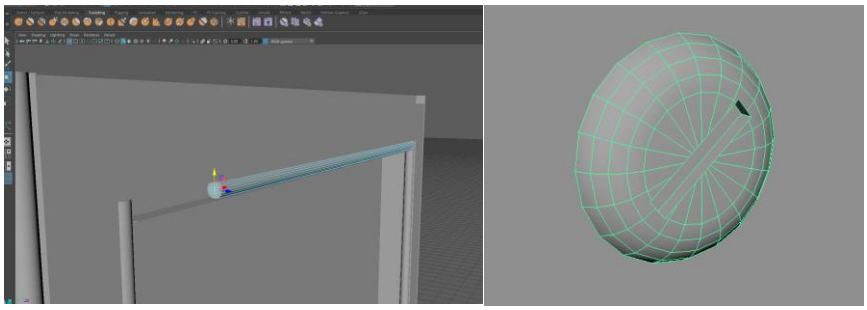
Wedge

One of the shops in the arcade has a side window as it is next to the side exit. I used the usual windows and panels for the side of the shop, but found it hard to marry these together with the front of the shop. I decided to use a wedge to gently curve off the step around the shop, and the result looked very natural.



Detail

I noticed some small details in the Arcade that I was keen to model. These included things like screws and door handles, the direction a door opened in, and piping in the doorways as shown below. Small details such as these are what really makes a building come to life, and are often missed.

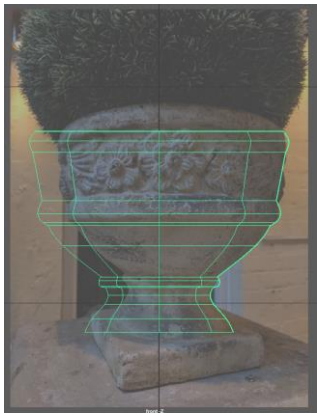


Bevel Curves

By far the most complex geometry I had to create was that of the ornamental railings surrounding the second floor balcony, and the dragon design featured in the corners of every shop. I tried to start modelling these first of all as they were the most interesting aspects of my model, but without ay previous experience I had gone in the deep end. I traced the curves of the objects, but came into trouble when trying to make these 3-Dimensional – lofting and creating planes from surfaces didn't always work, so I tried a different approach. I discovered that bevelling the curves created a nice 3D surface which I could then convert to polygons and further model as necessary. The one downfall of this method came with symmetry – in the railing I created components and then revolved them to fill the design, but this left some seams at the joins where the surface would dip inwards slightly. I decided that the compromise was worth it, as the bevels were quite small and unnoticeable. I also used the bevels to create a 3D dragon head, sketching profile curves as shown below and building these upon each other to create the design. This effect worked very well and I am pleased with the design of the dragons.

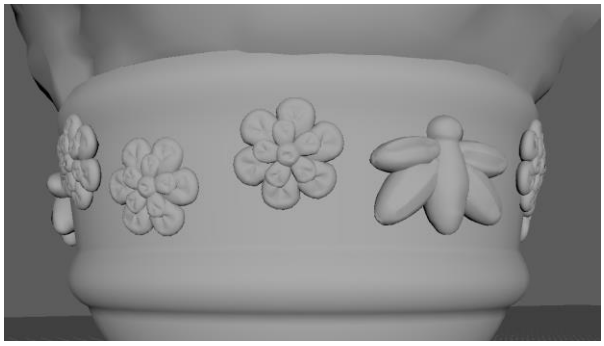
Revolve

I used the revolve function to create vases and columns as below. This allowed me to sketch a profile curve and then edit this as necessary to model the items accurately.



Sculpt

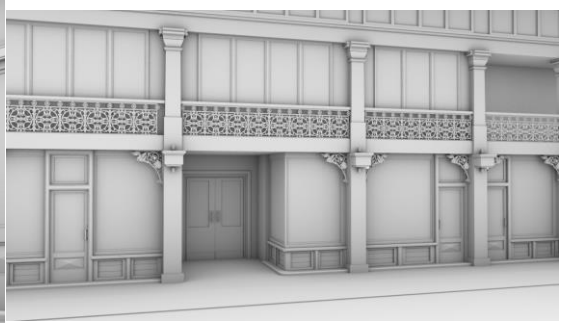
I also made use of the soft sculpture feature for details on the vase and plants. My aim was to create a more natural looking design, which I think I achieved.



In summary, I created the following components:

- Multiple types of column, including load-bearing and ornamental
- Walls and floors for each level of the Arcade
- 15 shops with differing store front layouts, each consisting of doors with piping details, panelled bottoms, windows, keyholes and door handles complete with a variety of screws
- Intricate ornamental railing and dragon decorations, created by tracing curves over a reference image and bevelling these. The tail of the dragon uses a 3-Dimenisonal extrude to wrap around the flowers
- Spotlights for each main column, complete with bulbs
- A side exit and various other doors into the Arcade, including an alcove next to the stairs
- Vases with shrubs in them, featuring extensive use of the soft sculpture feature to create details such as bees, flowers and the plants themselves
- Stairs, with both lower and upper levels, the upper steps being exposed. The bannister for these features both rotational extrudes for the balusters and 3D extrudes for the handrail.
- A large circular design for the back wall, where I had to simplify some very complex geometry to create a symmetrical design
- Windows for the shops, second floor offices and the glass roof
- A sign for the Arcade, positioned in the railing at the front of the building.
- Doors and door handles

I have rendered the following images to show off some of the details in my model.



In summary, I found that there was usually a hundred different ways to make an object. I tailor made every component in the model with the thought of ease and speed in my mind, which came hand in hand with modelling flexibility. I found modelling the intricate ornamental details the hardest task, but also the most rewarding – these details took my model form simple polygons to a much more realistic looking building. If I were to continue with the model I would love to model the general wear and tear of the building – at 200 years old, it has many characteristic flaws, such as chipping bricks on the design wall, which would really add another level of detail and realism. In conclusion, I am very satisfied with my model, but of course there is always improvements to be made. My biggest regret is spending so much time on the model, and forgoing the report until the last minute.