

Assignment 3

Concept

Swamp clearing, with a metal hatch - finding and opening it reveals a neon lit laboratory with diary entries and clues of what happened.

Outside description

- Forest clearing, the player character is boxed in within tall dead trees and patchy grass.
- A metal hatch shines through foliage, surrounded by radioactive grass.

Interactions outside

- Opening hatch to the lab
- Finding a key for the hatch, found by following a path of radioactive grass

Inside description

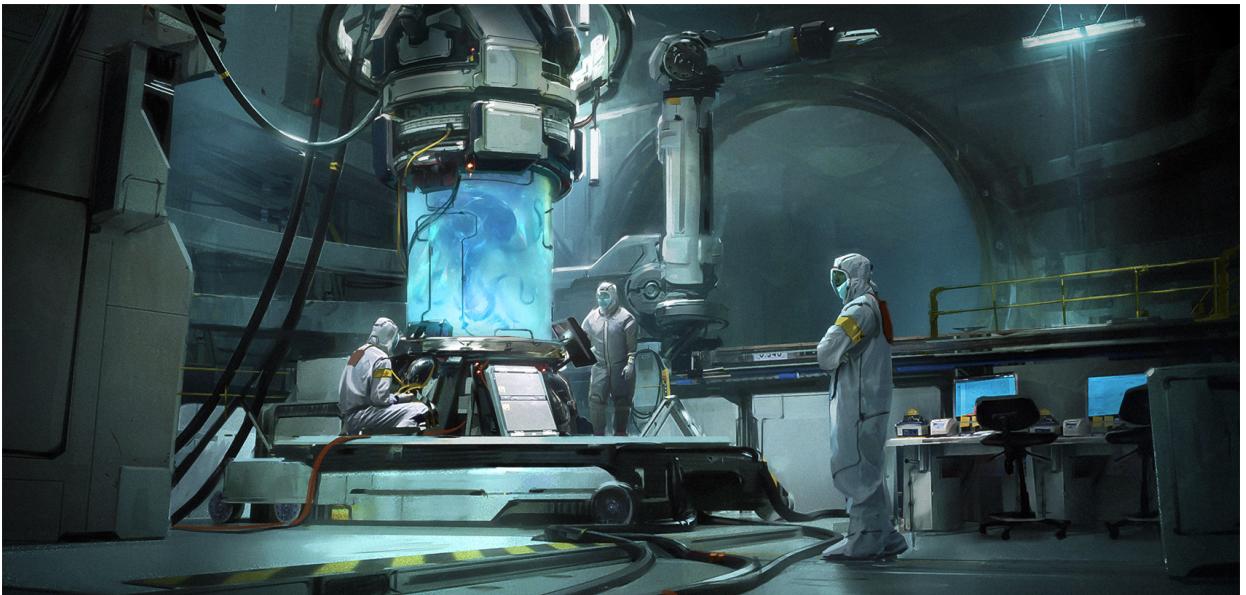
- A futuristic modern lab, lit by neon and LEDs from glowing electronics and fluorescent tubes. The scene has a few unorganised/messy objects, out of place within a neat and tidy laboratory. Light up buttons, and glowing error messages on screens.
- The player character walks around and reads lab notes and journals, revealing information about the monster in the tube, and how this happened.

Interactions inside

- Turning on light
- Read lab notes + journals
- Pressing buttons
- Opening a cupboard

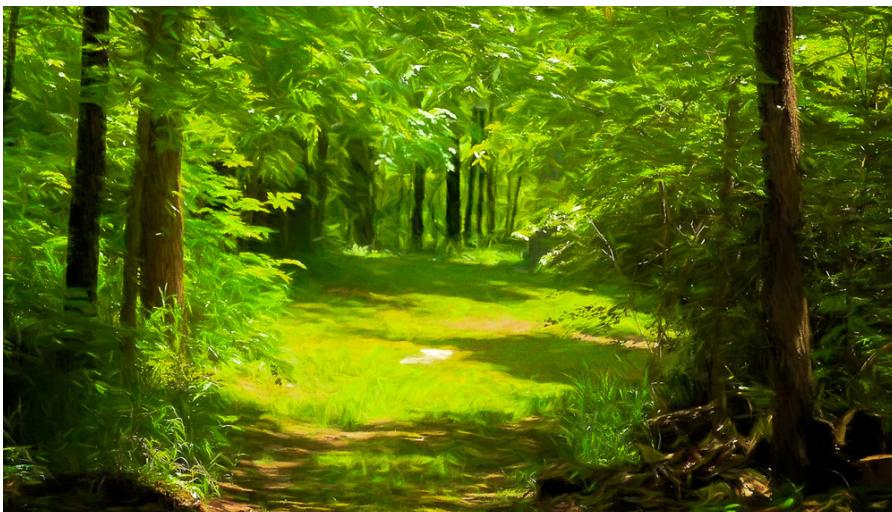
Cutscenes

- Once the player has read the last and most pivotal note, run a check when they attempt to leave the hatch. (player POV shot) Distant growling is heard from behind the player, and as they turn items drop and move around, and the tube is emptied. The camera looks side to side, confused, and turns around to run. The camera drops as growling is heard from directly behind the player, as the screen fades to black.



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Architectural Style - Modern /Sci-fi

Initially I chose modern architecture as my style for my scene, but as my idea and narrative developed this became more of a blend towards sci-fi, but retaining the hard edges and strong shapes found in modern architecture, for example the shape of my laboratory being angular and more like an octagon than a smooth room.



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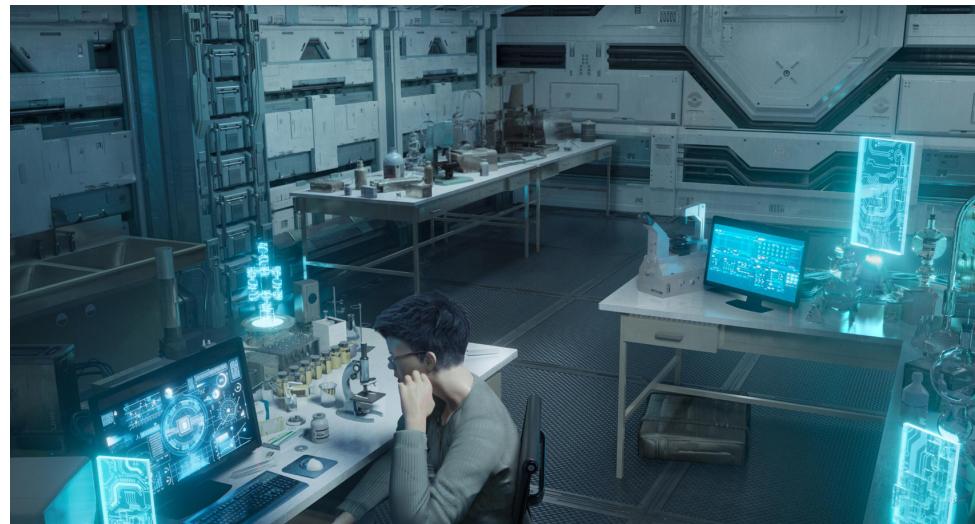


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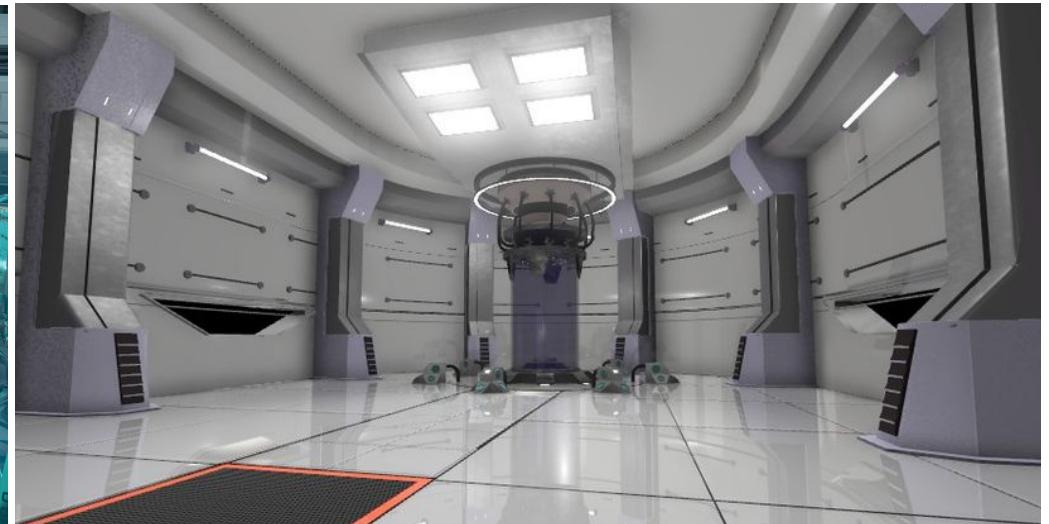


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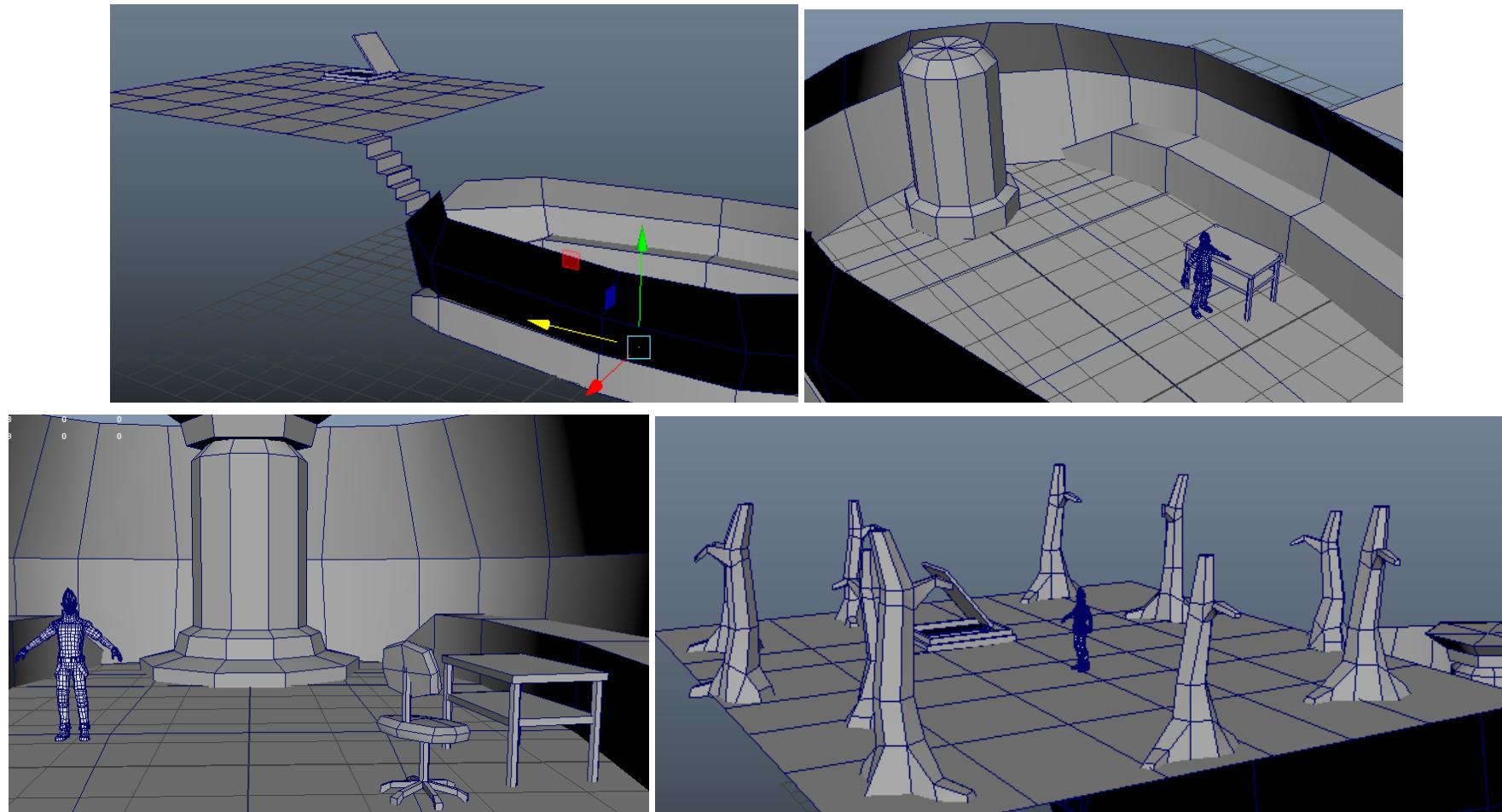


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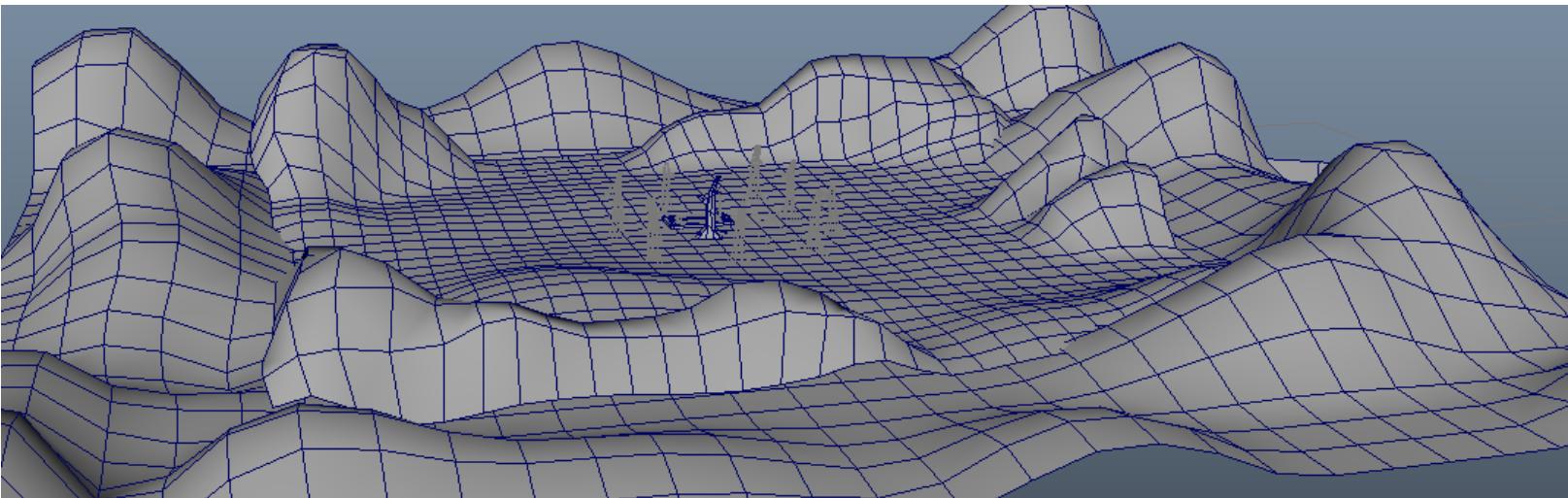
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Greybox

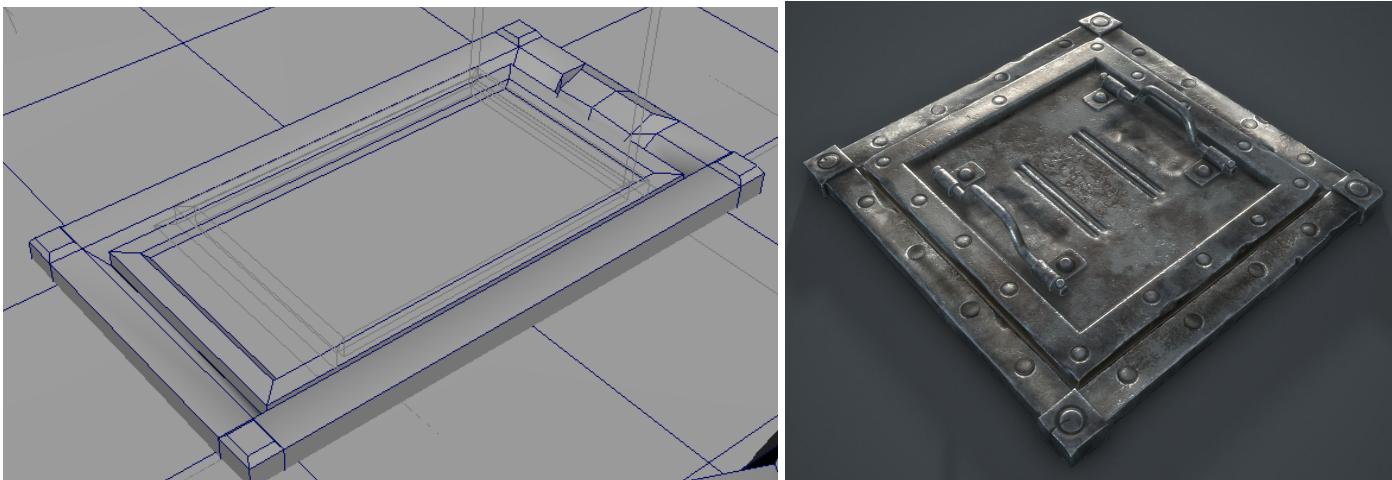


My initial greybox was a small flat terrain with a few dead trees as a placeholder for a larger terrain. I made a small 'basement' type of lab, led underground with a flight of stairs. However, after feedback to expand my scene, I used this greybox as a base for my actual Maya mesh, but expanded both my terrain and the laboratory, to make everything seem larger and more imposing.

Maya Modelling

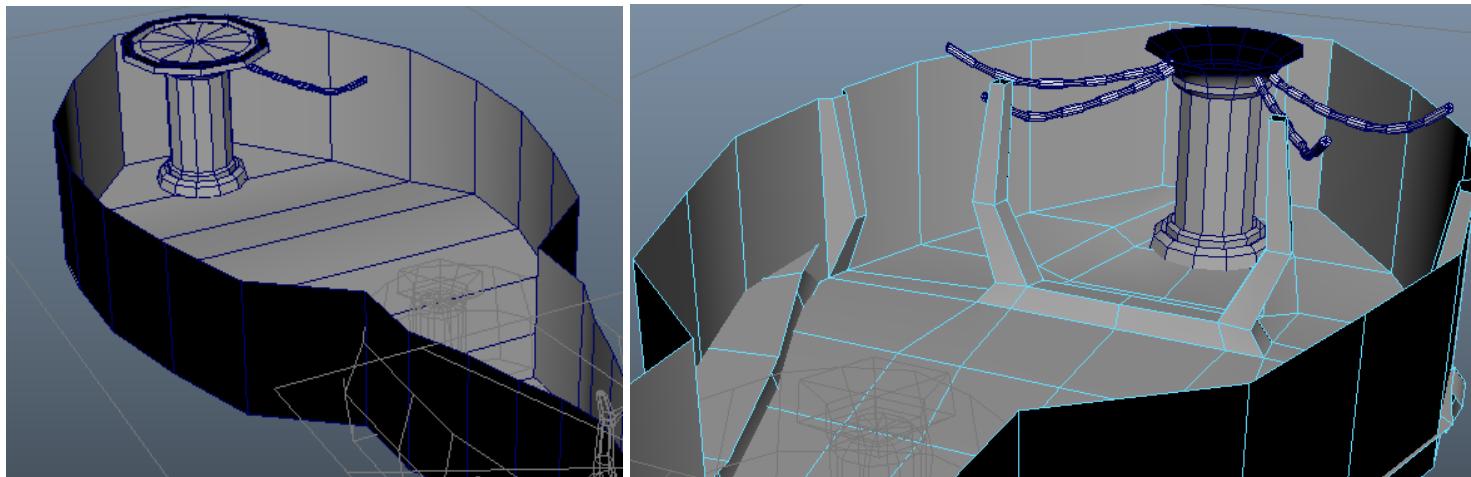


I made another scene using my greybox as a reference layer. I made my exterior much bigger, with small mountains and modelled a tree, to be made into a prefab in later stages.

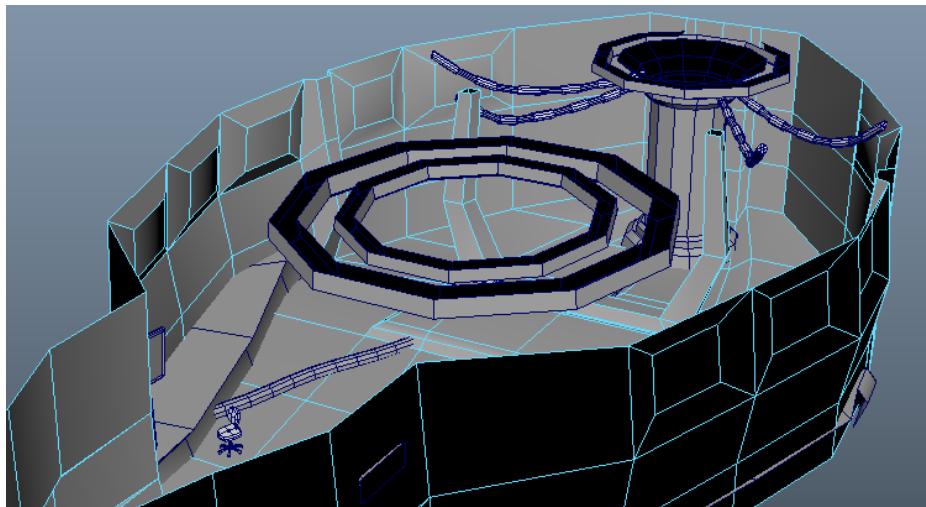


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Next I made my model of the hatch door, using the above image for inspiration. I used the same reference later during the texturing stage.

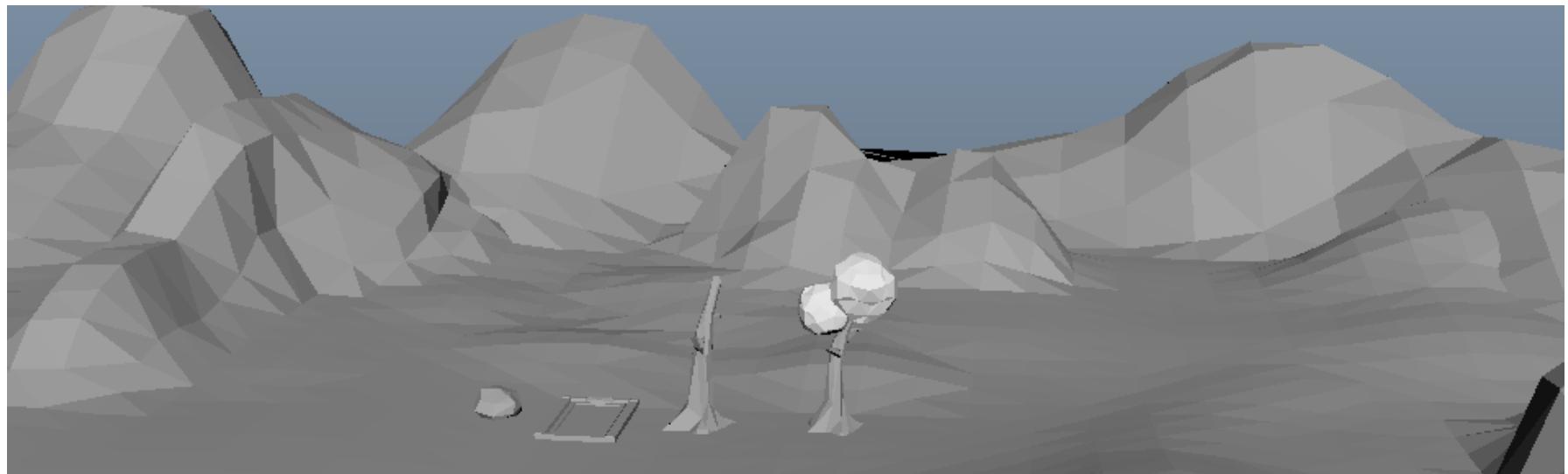


For my lab, I extended it a lot, making a small narrow hallway leading down from the staircase, and then a much wider and rounder chamber. I also experimented with adding small paths branching off from the hallway, but I ended up removing these as they led to nowhere, and leading them back into the main chamber didn't make much sense, as it rendered them useless.



[\[source\]](#)

Next I modelled my items, making the ceiling lights, counters, lab chairs, screens, tubes, and hanging wires connected to the main containment tube. I also used extrude soft select to add details on the lab walls/floors. I used the above image to model my whiteboard.

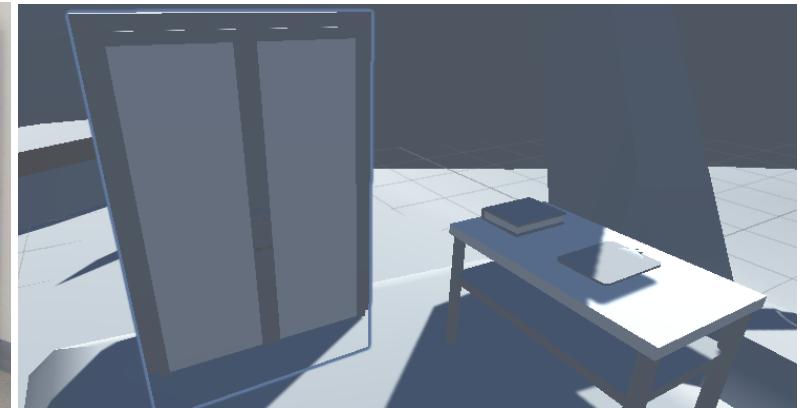


Then I went back to the terrain, and used triangulate and harden edge to make my scene more angular.

I decided for this assignment to try and blend the polygonal style of the previous assignment with a more painterly style. I liked the angles and hard shapes of assignment 2's style, but also thought something more realistic and soft would suit this scene's narrative more than a highly stylised one.

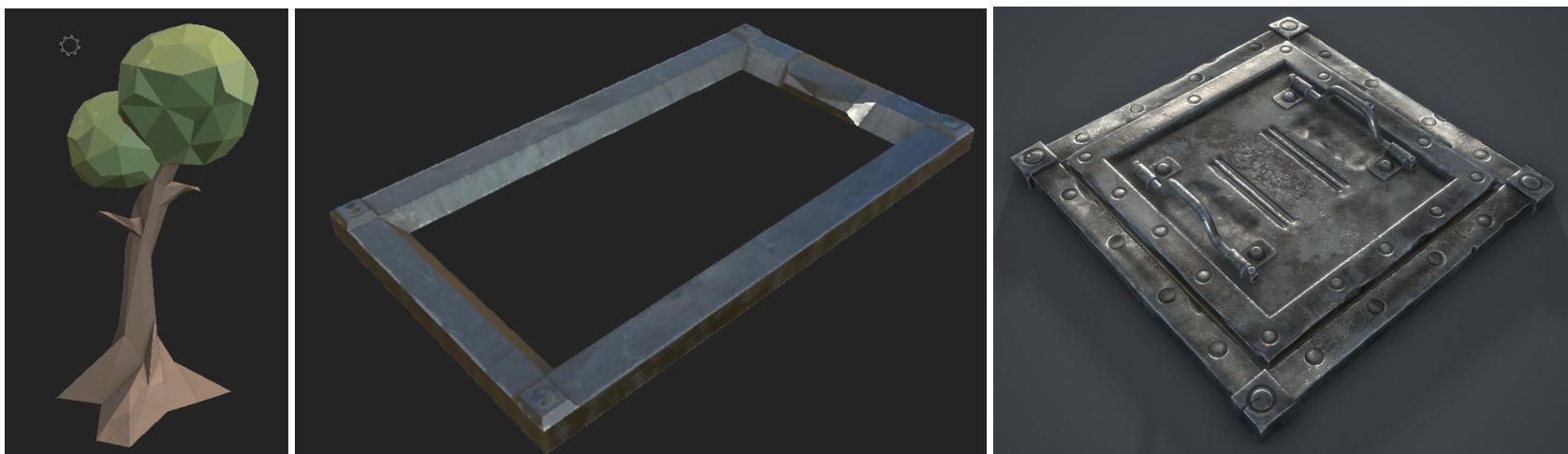


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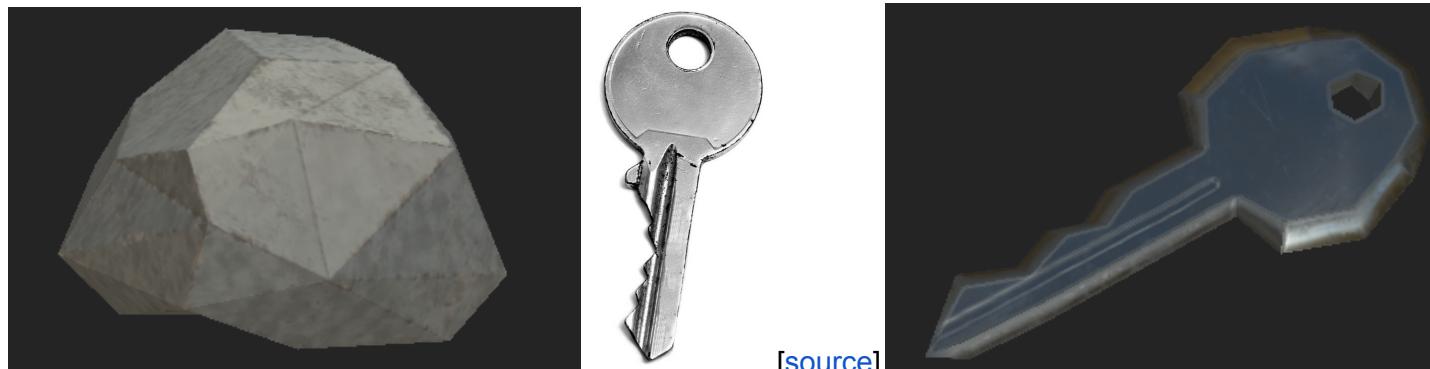
Lastly I went back into my lab to model the objects above, later using these pictures as reference when texturing. Before importing my Maya mesh into Unity, I used triangulate and harden edge on every single object, for texturing later.

Substance Painter + Unity



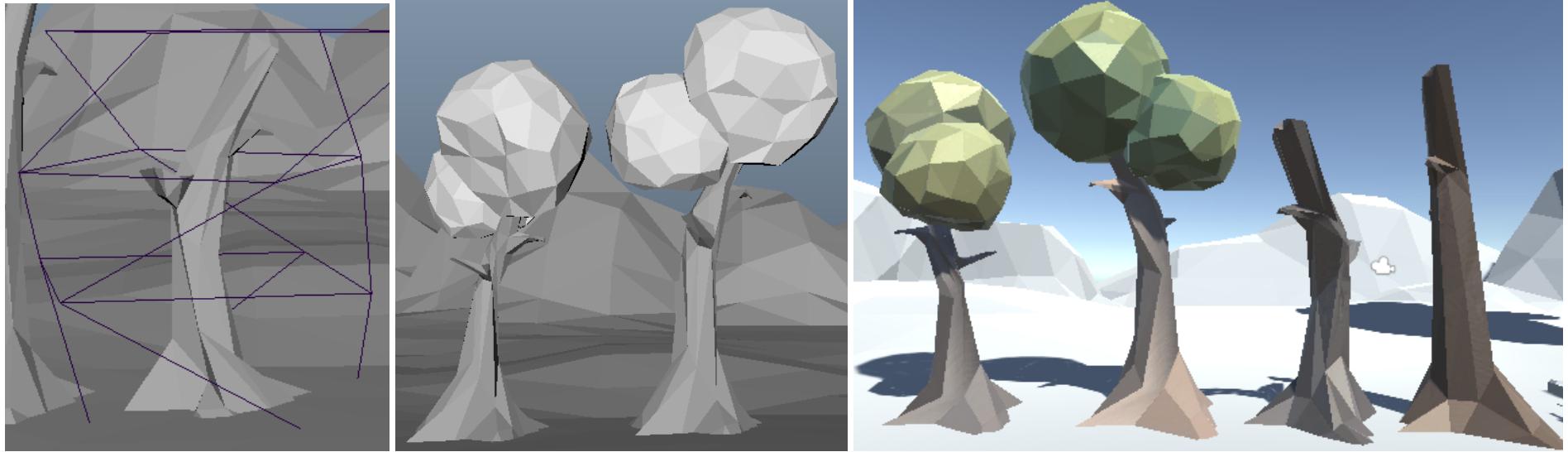
In substance painter I first imported my tree mesh, using the same technique as the polygonal trees made in assignment 2, but using more grunge and height layers for additional texture, to make my objects look less flat. I also used more neutral and desaturated colours to keep a stylised model but with a more realistic colour palette.

I made the hatch using the 'steel stained' smart material, but altered each layer to make it more stylised, and keep a balance between detailed and flat. I also applied a metal edge generator, a grunge layer to create dirt, and used an alpha pattern on a height layer to add small details and scratches on the metal.

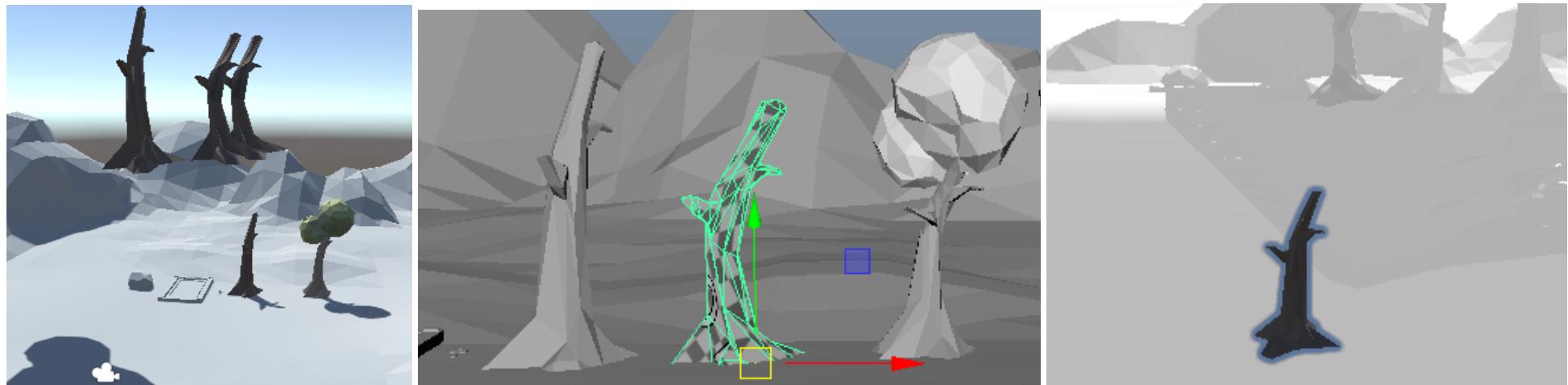


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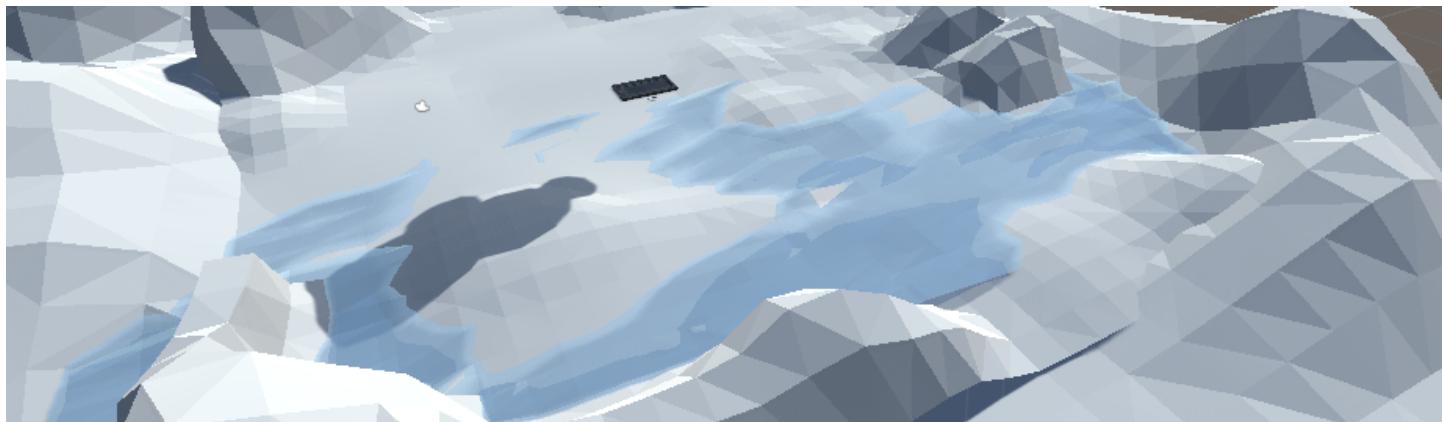
I made the rock by altering the 'creature teeth' smart material, and applying a light generator and grunge layer on top. I saved the metal of my hatch as a custom smart material, and used a height layer to draw the grooves of the key.



Going back into Maya I used the lattice deformer to create a variation of my tree model, and altered the colours of my textures to make a subtle colour variation. I also made two variations of my dead tree model, again with two colour variations.



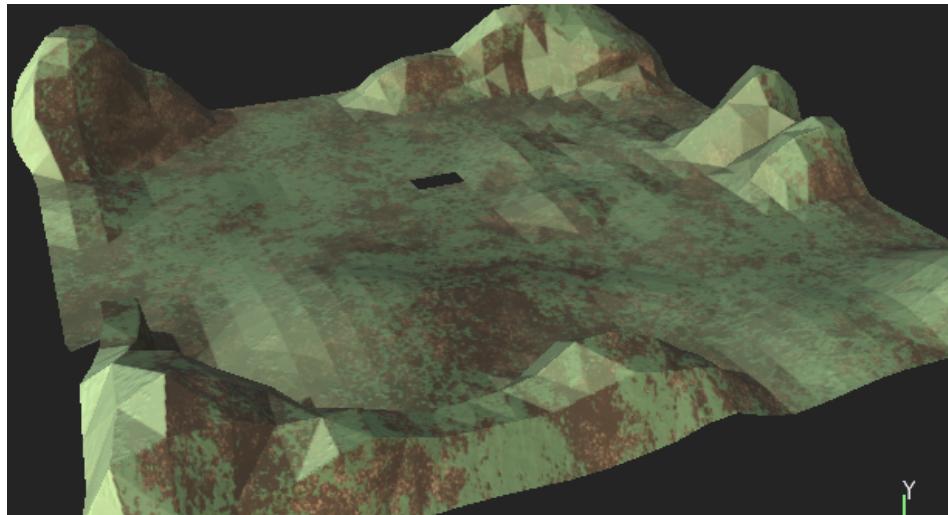
After making my trees into prefabs, I found that prefab painter made my prefabs float despite my mesh's pivot being on the ground. I fixed this by going into the separate prefab screen, where the Y position was 7 for some reason.



Next I made a stylised polygon mesh of water, as I wanted my forest to be more swampy and wet. I used two meshes of different colours to add depth.

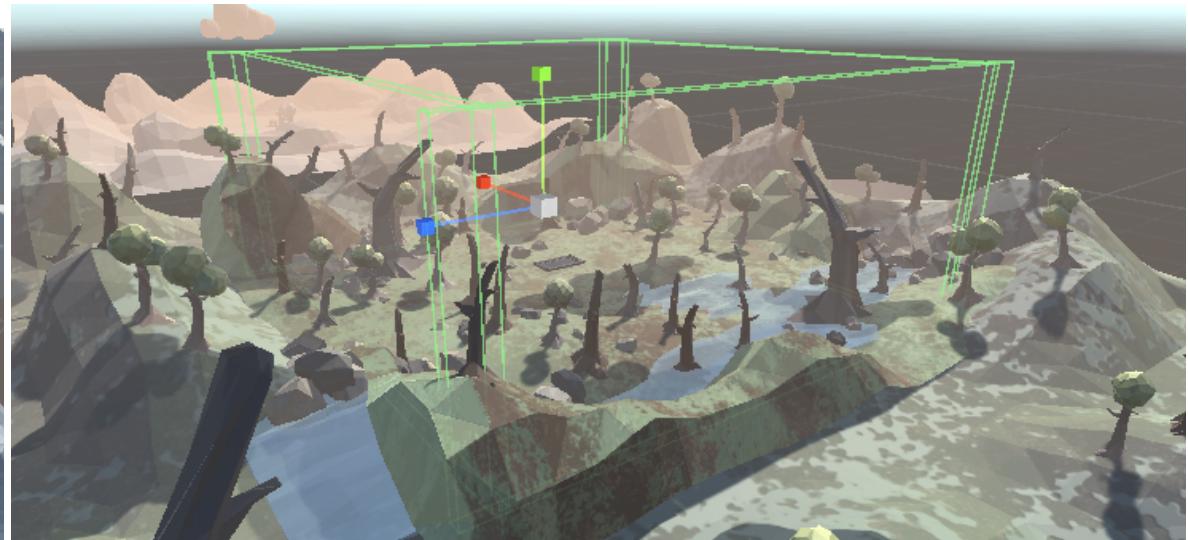


Then I used prefab painter to cover my terrain with trees. I mainly used the dead tree model, as I wanted my land to be less lush. I placed a few very large dead trees for a distinct variation, and then went in and manually moved and rotated each prefab to ensure edges weren't sticking out of steep mountains. Lastly I then added a capsule collider around each of the tree prefabs.

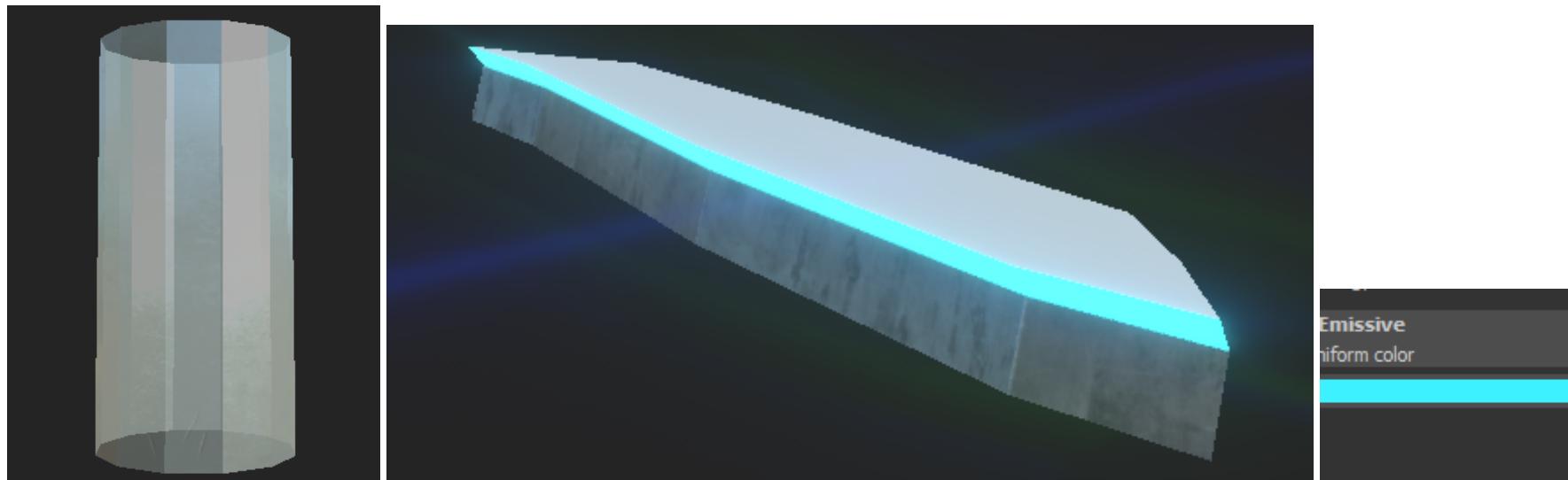


[source]

When texturing my terrain I used the above image for colour inspiration, I wanted a swampy and kinda 'dirty' looking terrain, using dirt generators for blotches of dirt peeking between grass patches, and applied two light generators on the tops and sides of the mountains to keep the stylised approach.

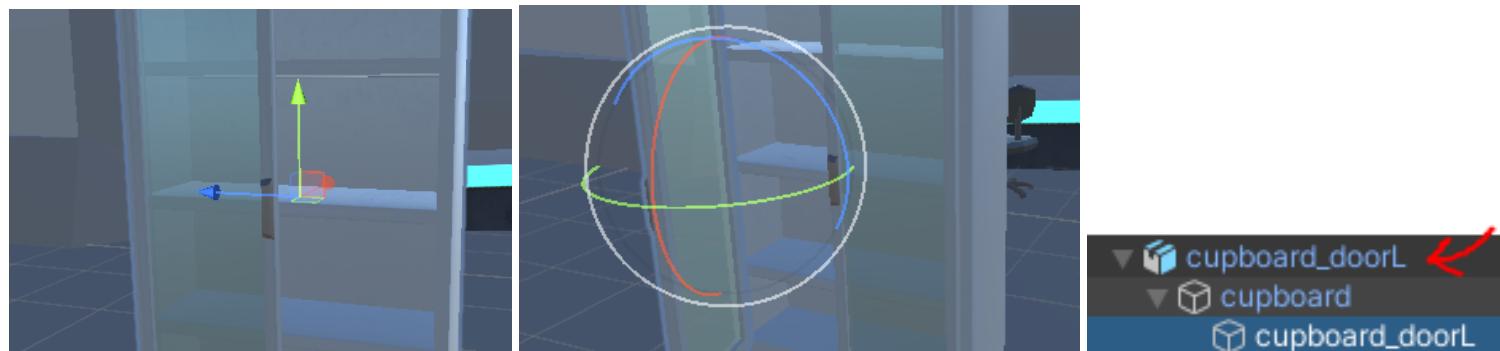


I then made my clouds into a prefab, using a lot to make it look overcast. I then made the fog a light orange, and added tight boundaries around the scene.



I then textured the glass of the tank, using pbr metallic roughness alpha to make it semi transparent. I added two grunge layers on top to simulate dirt and grime, and then a height layer to add scratches and damage onto the glass.

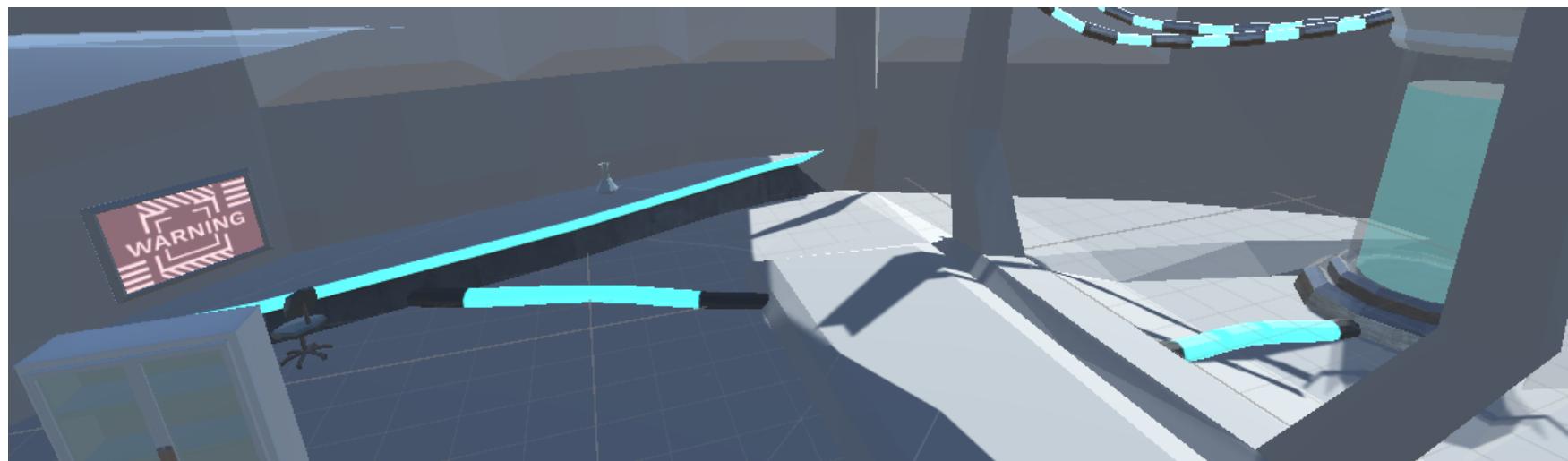
I then started texturing the counter, adding an emission channel to add a glowing strip under the plastic counter. I made the white glossy plastic by using a white fill layer with multiple grunge and height layers to add roughness and texture to its surface, and saved it as a smart material. I used the metal smart material under the counter.



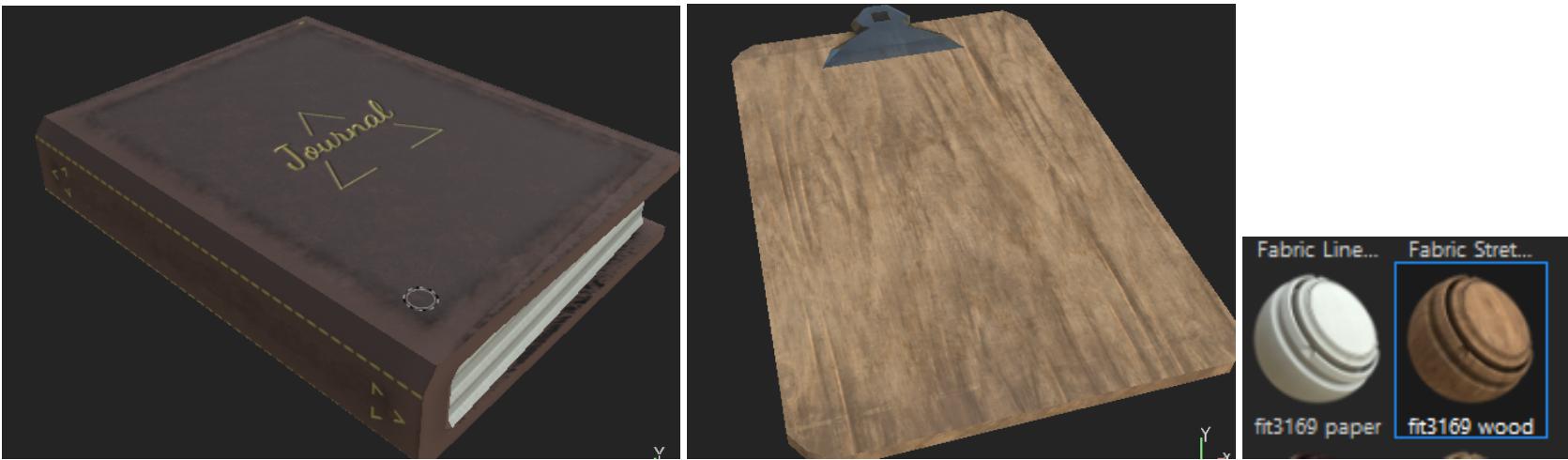
However the pivot points I set in maya didn't properly export to Unity, so I attempted to fix it using [this forum](#) for use in future animation. Then I realised it was because the object above (red arrow) was placed at the origin, but the highlighted one was placed where I put it, which was why my pivot was messed up.



I used the [above image](#) as reference to create my two screens, one red warning screen for contrast against all the blue, and a blue system error one. I used an alpha channel to make the screens semi transparent, and emissions to make them glow.

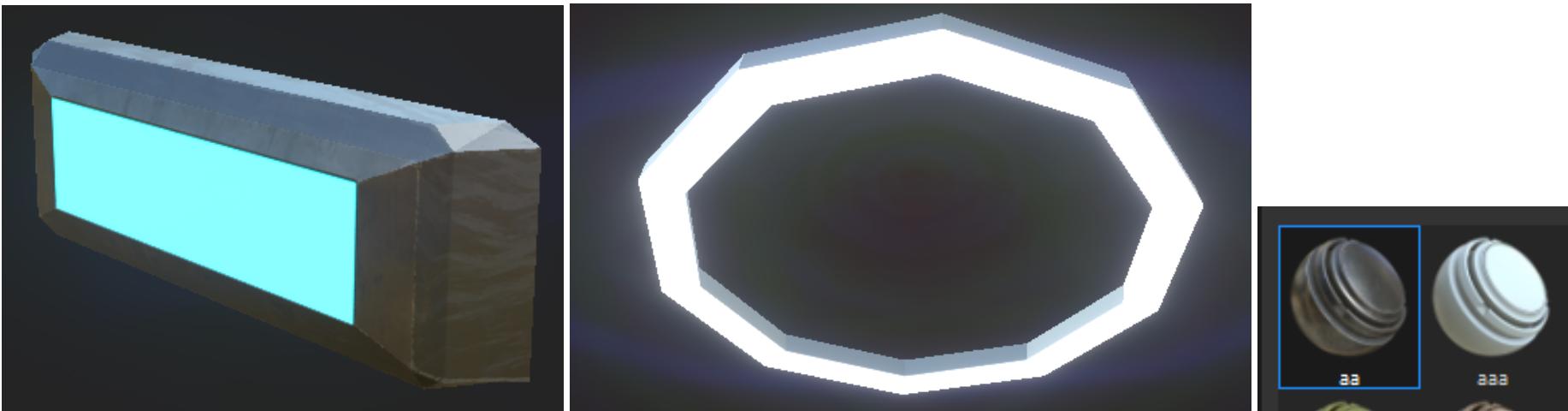


Then I textured the objects above - the hanging wires and tubes using my metal and an emission layer, the cupboard using the metal and plastic I made, with an alpha channel for the glass. I used a similar technique to the tube to make my glass beakers, and made the chair using fabric patterns and light generators to make it look textured, and created a rough black plastic. I made a material in Unity for the liquid in the tube, to quickly alter its emission intensity.

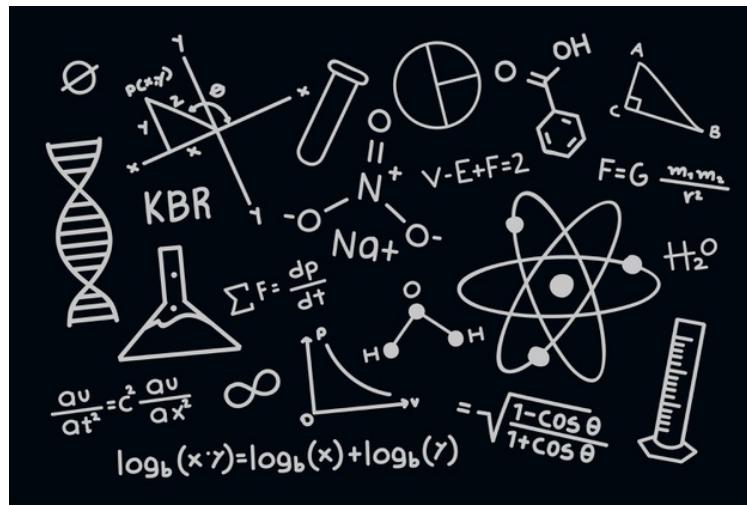


Next I textured my books, altering the leather smart material and edge generator to make it look more worn. I used alpha patterns to emboss gold patterns into the book. I also made 3 other variations of books, all with different colours, different covers, text styles and spines.

I textured the clipboard using a wood smart material I had made for this unit, though removing some layers to make it more flat.



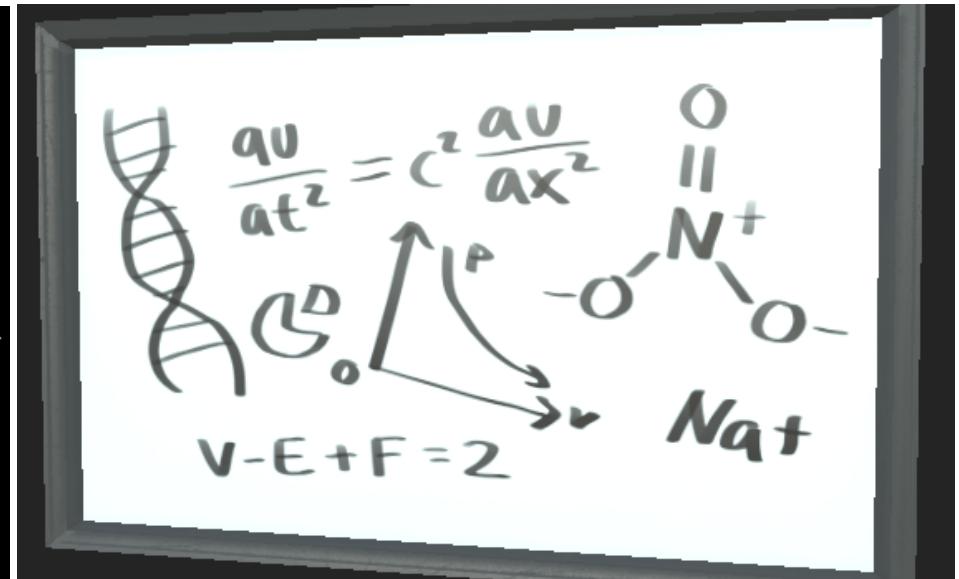
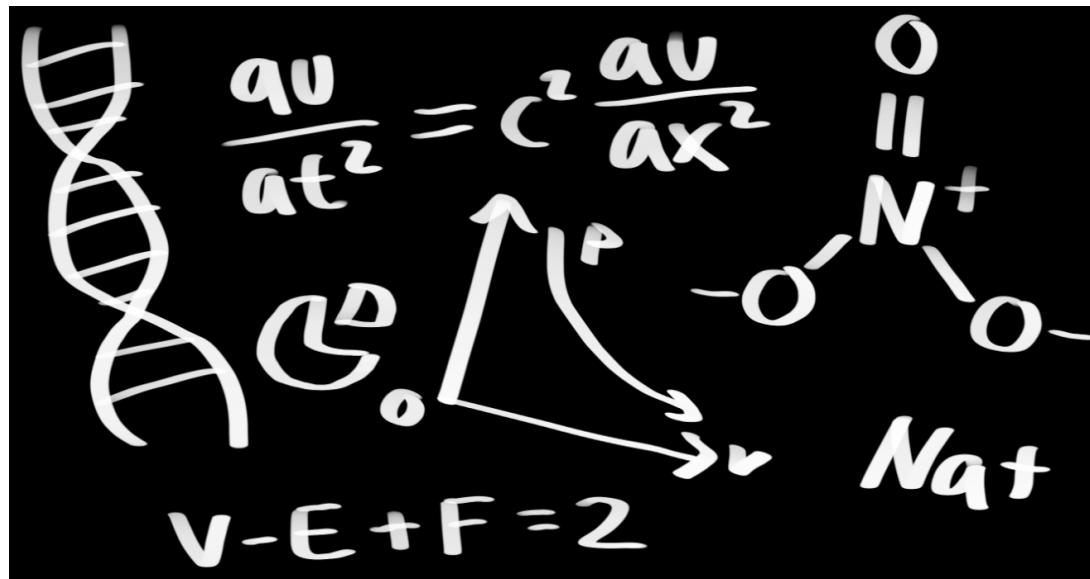
I textured the wall light using the metal smart material (named aa) and an emission layer, and made the ceiling lights using my premade white plastic (named aaa), and a white emission layer, with a high intensity.

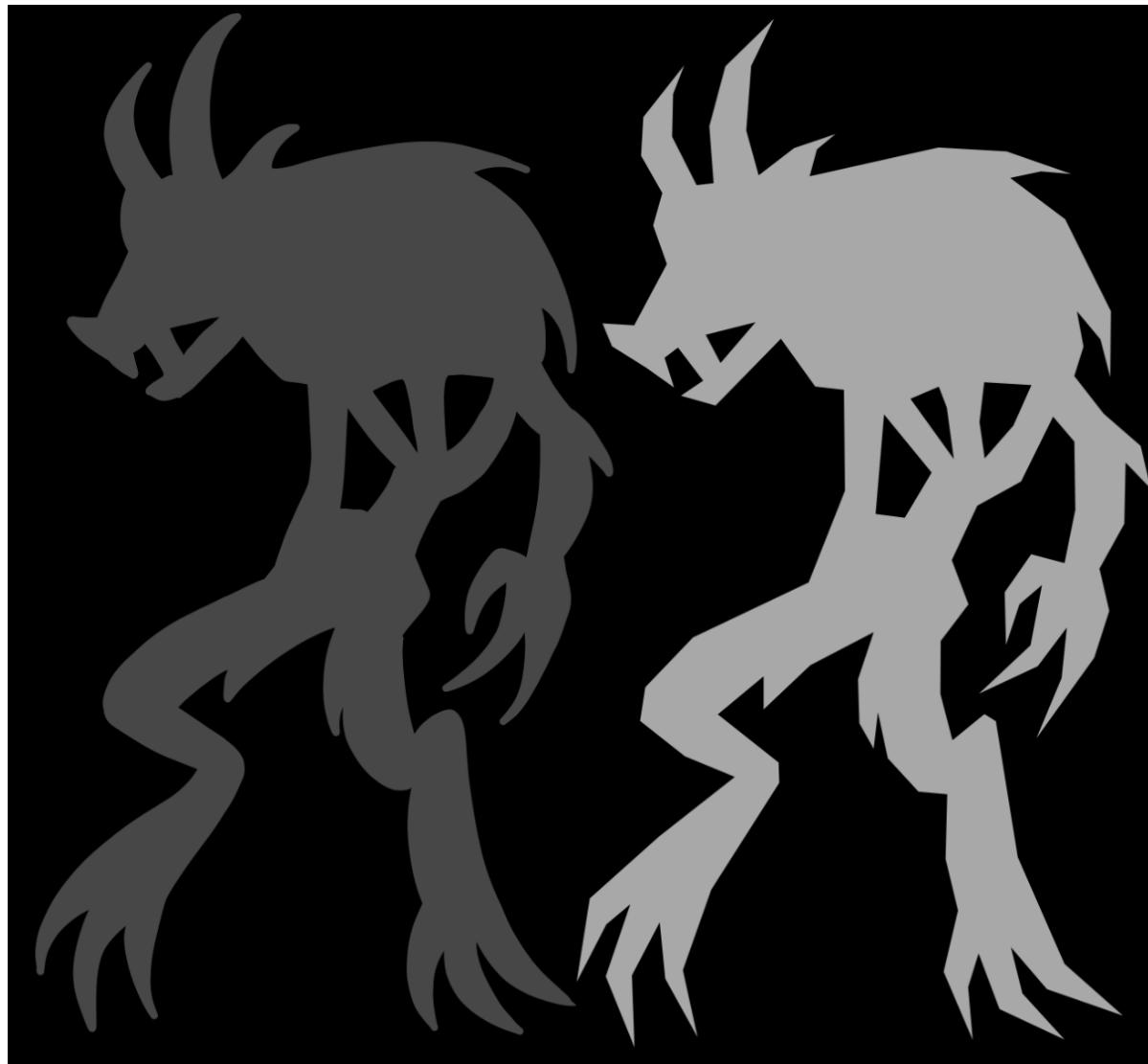


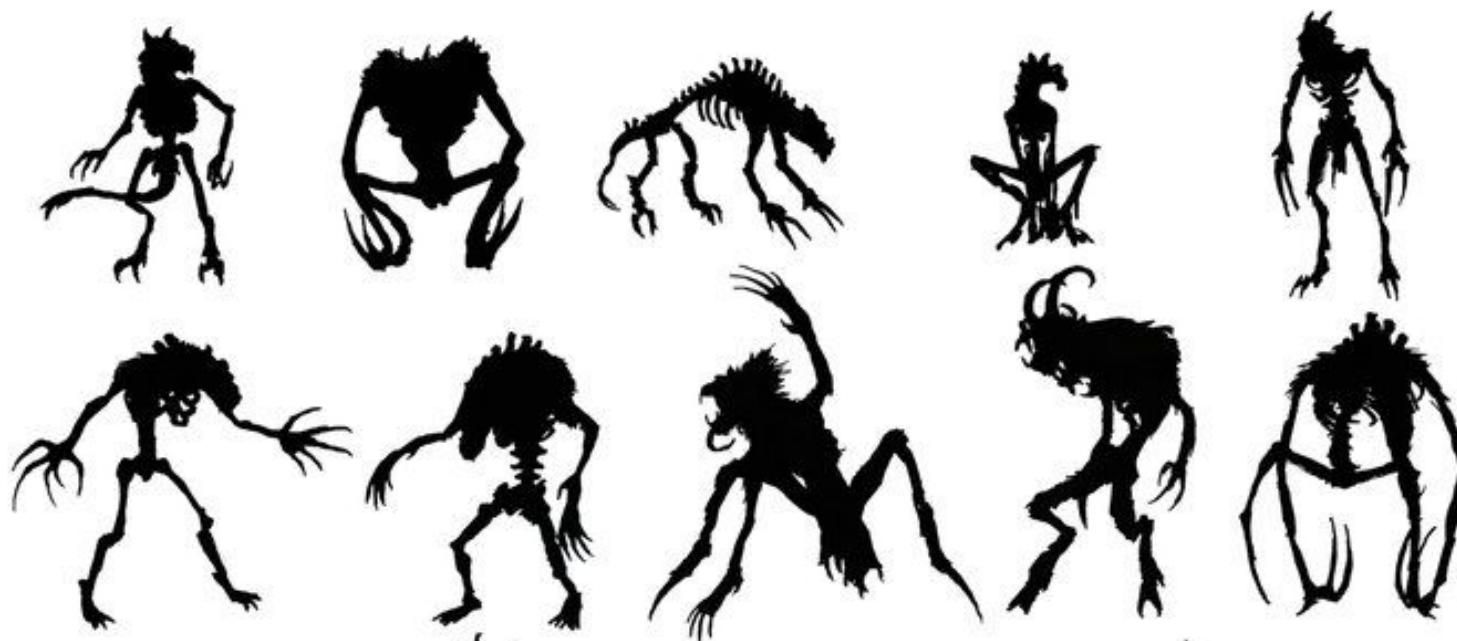
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I used the above reference image to make a hand drawn alpha pattern to put on my whiteboard.

I used a soft brush with low opacity ends, to emulate the writing of a marker on a whiteboard.



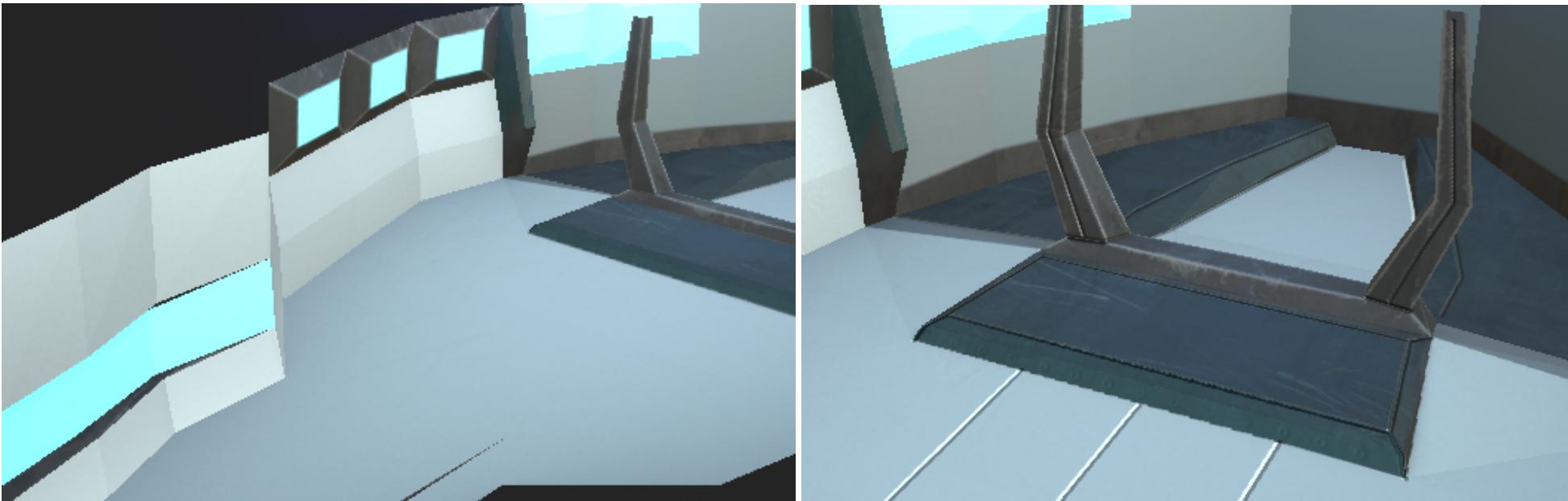




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Then I made a monster using the silhouette of the above reference image (in particular the bottom row, 2nd to last). I used my personal style to make it look more dog-like and furry, then traced over it using straight lines to add to the stylised/low poly style of my shading and scene.

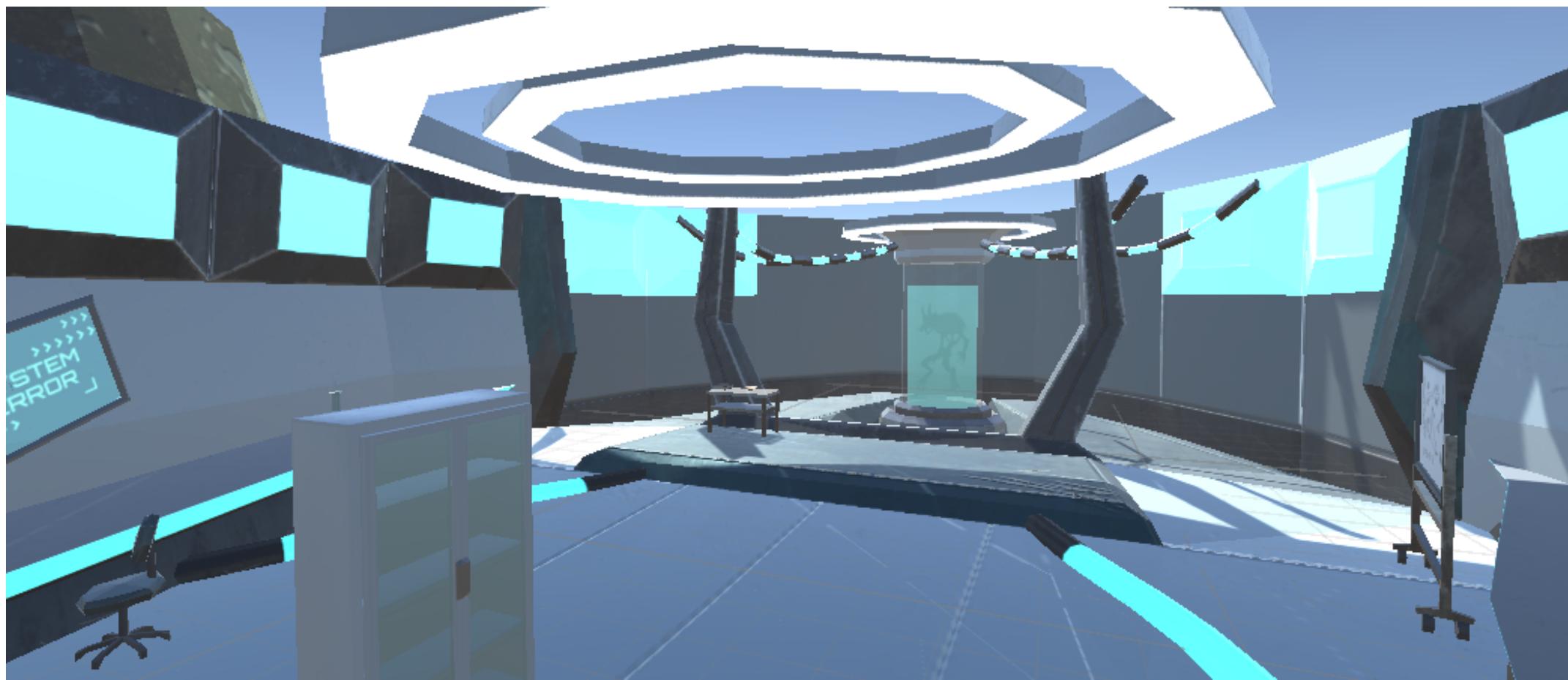
I then used a flat plane to place my monster into my scene, and adjusted the material of my tank's liquid to make it less glowy and more transparent.



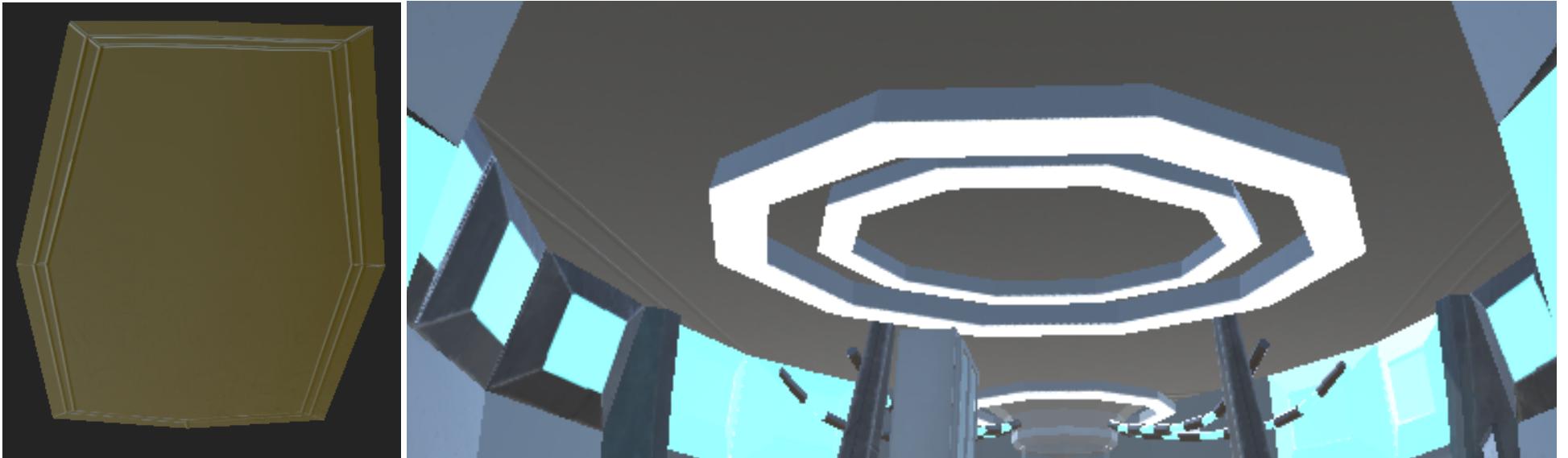
Then I began texturing my lab, filling the walls with mostly the white plastic material, adding details of metal, and changing the material of my containment area's walls to a darker plastic. I added emissive details on my walls, and then used a height layer to draw grooves and details onto my mesh. I focused on straight lines and sharp edges, to keep my lab looking futuristic and modern.



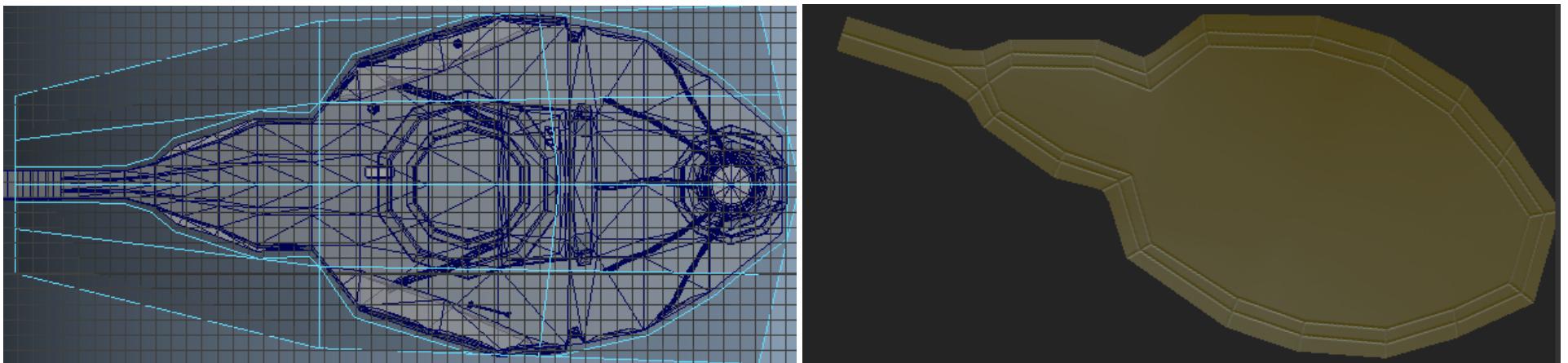
Height layer drawn on the emissive and metal sections.



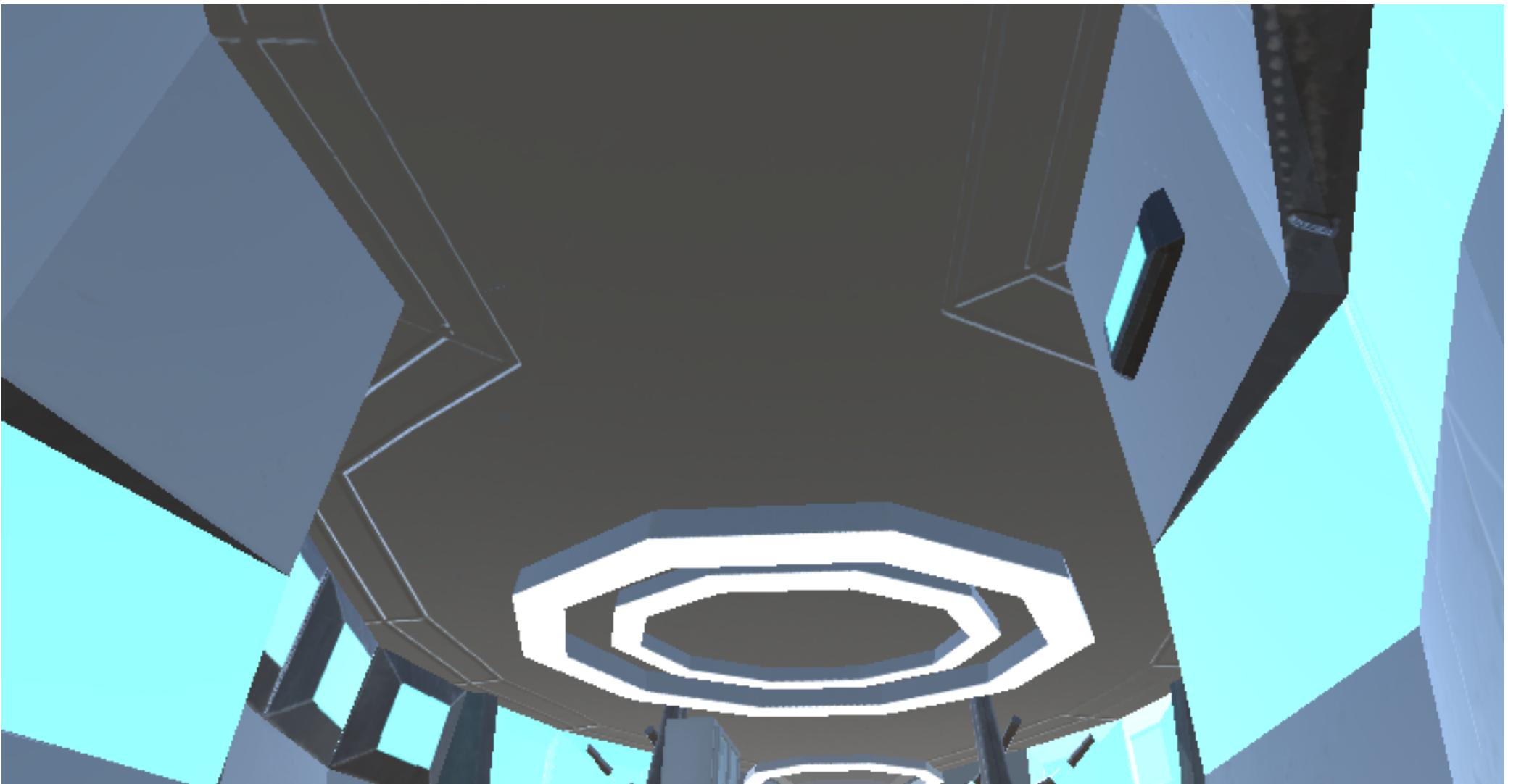
My Unity scene with all the laboratory parts imported, materials properly setup and placed onto meshes.



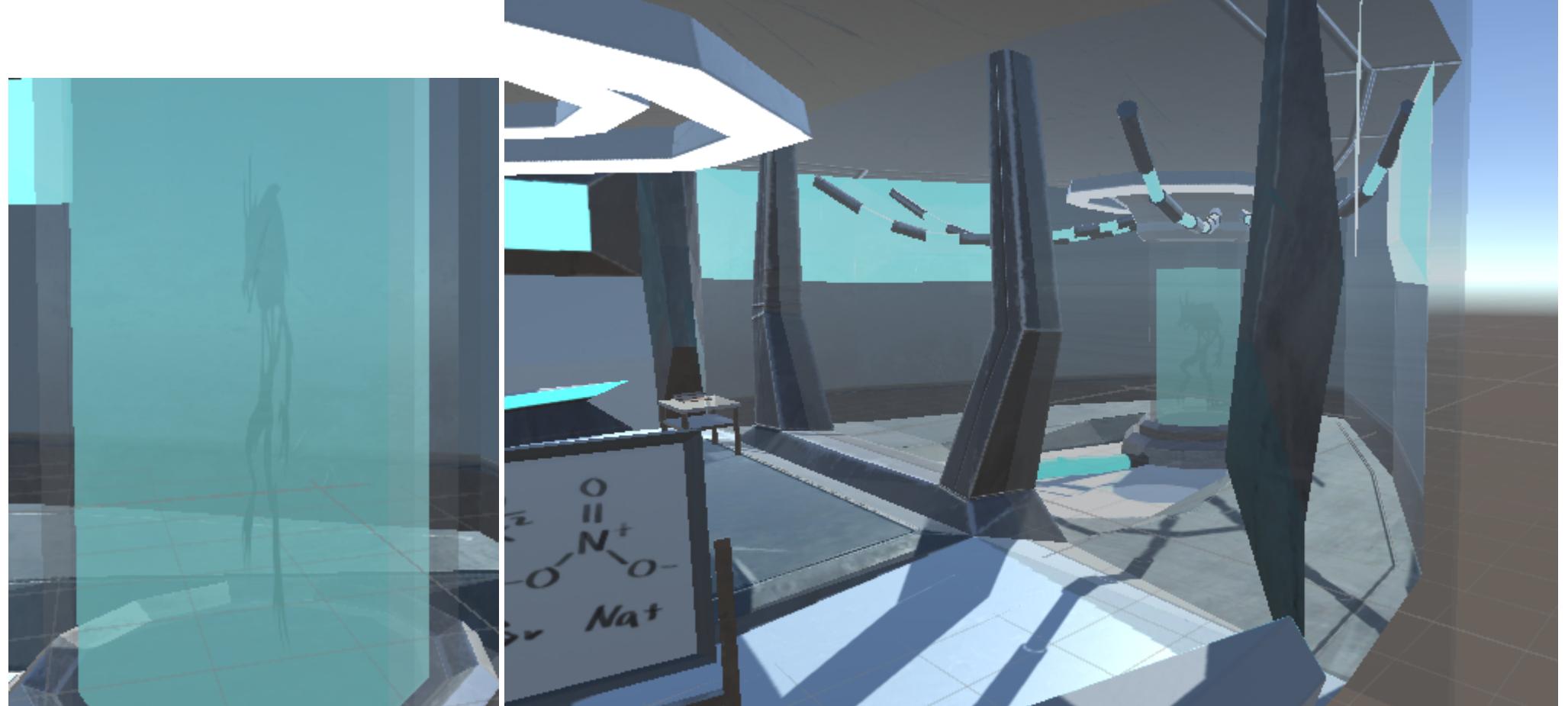
Then I began to texture my roof. I wanted this to be a simple glossy plastic, with grooves as details. However I realised that I hadn't shaped it properly, and hadn't UV map it correctly, thus it didn't wrap around the ceiling as desired.



I then cut around my lab, deleting the excess faces, using a knife tool to cut around the lab's shape. With this proper outline I went back into Substance to properly draw in my grooves.

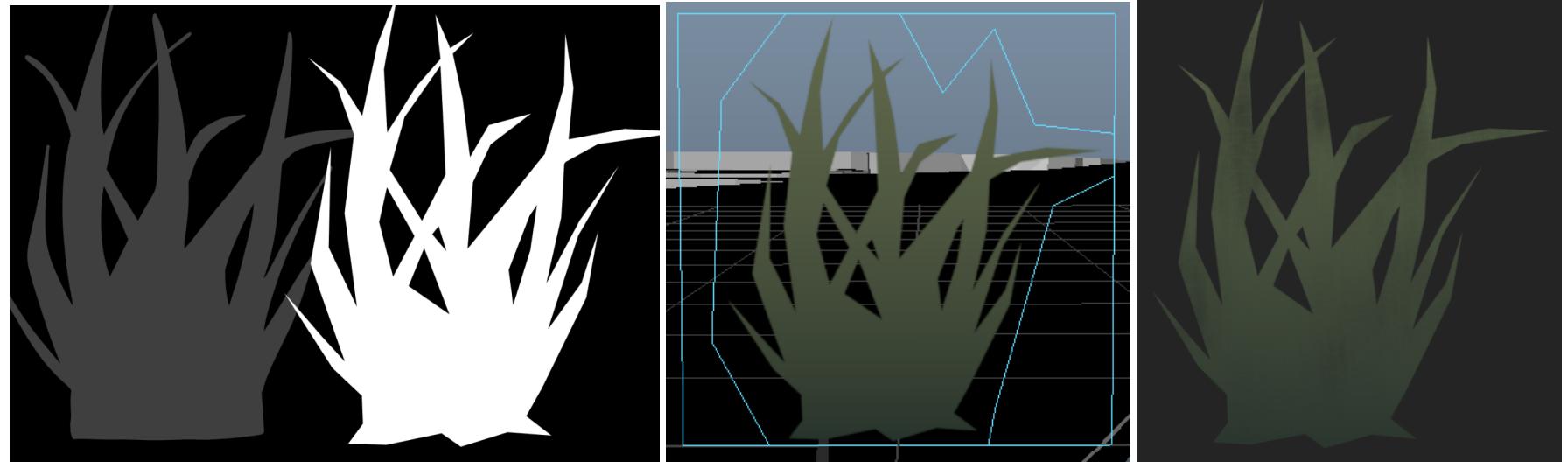


My roof with the proper texture, wrapping around the ceiling to emphasise its shape.



However at this point I realised that because my monster was just a plane, when you looked at it from certain angles, it completely broke the immersion of a monster's silhouette. So to try and solve this issue, I inserted a panel of glass between the main lab and my containment chamber.

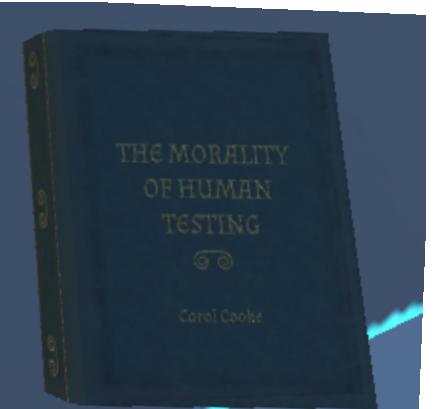
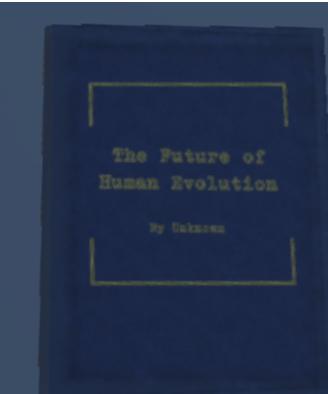
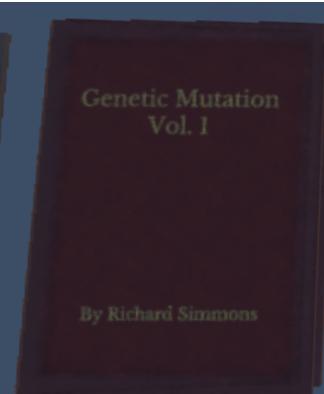
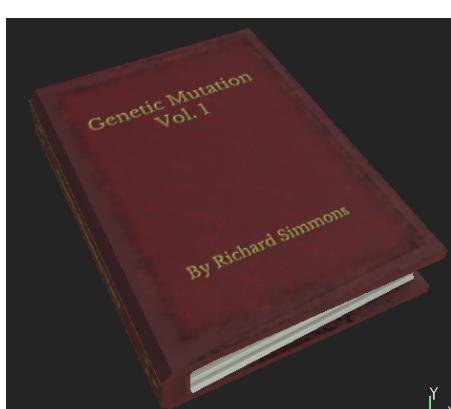
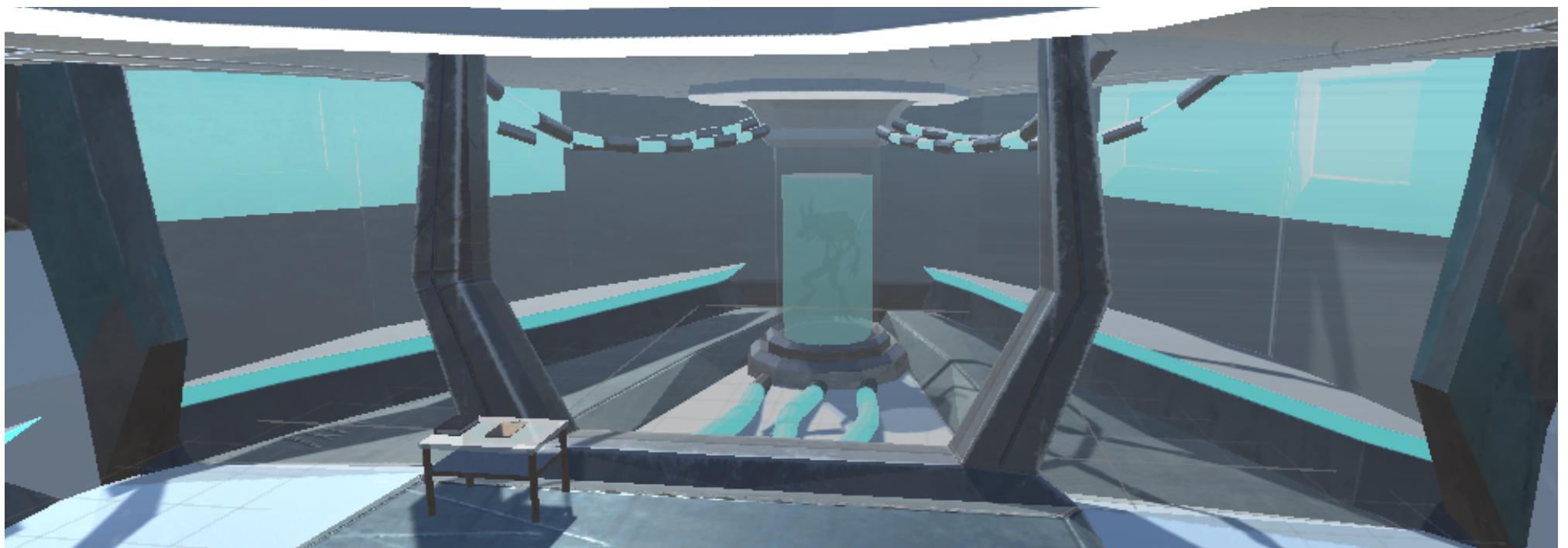
Though this means I have to alter the idea of my ending cutscene, I thought this would be a smarter idea compared to modelling a monster which wouldn't have the exact silhouette I want.



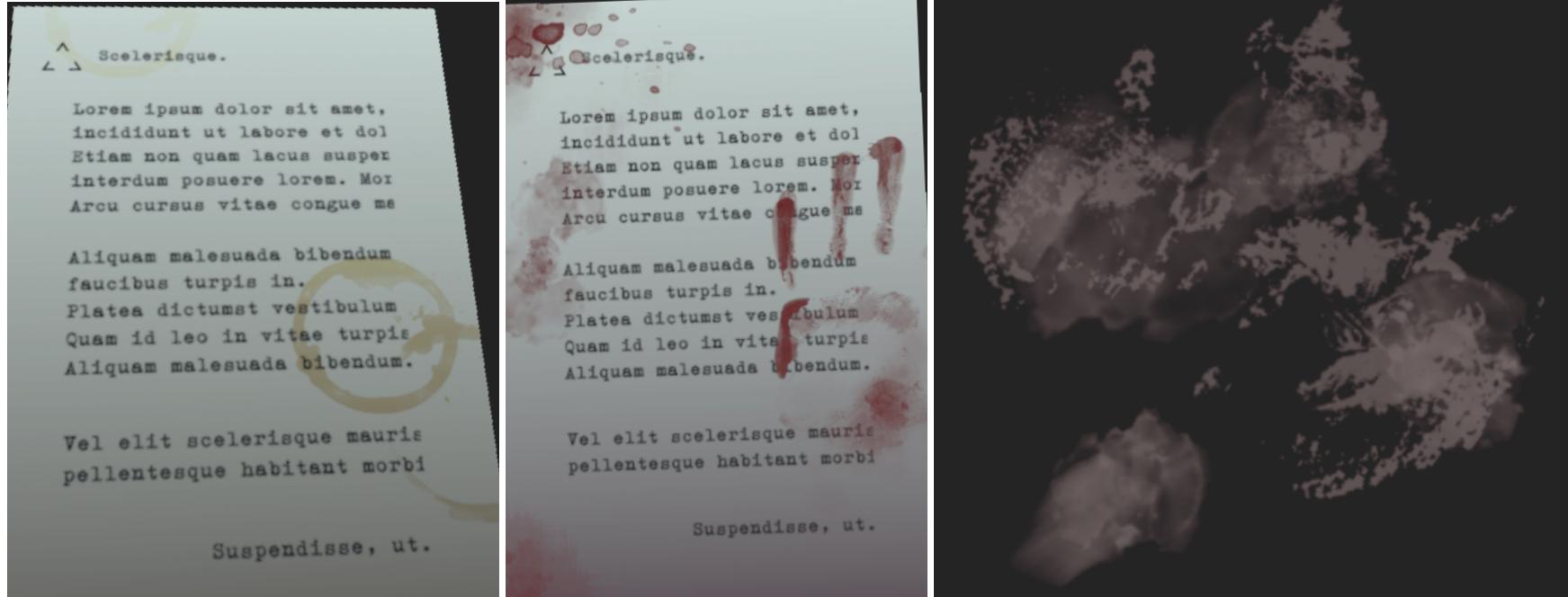
Next I made my grass alphas, again drawing it in my own style, then tracing over it to make it more angular. After setting it up in Maya as a two-sided face, I textured it in Substance, adding texture using height and grunge maps, and used a 0 opacity layer towards the tips of the grass to make a gradient.



After layering the mesh to make clumps, I decided to use fade (L) as a rendering mode instead of cutout (R) because of the opacity effects it created, to make it look softer and less solid, despite the weird overlap that occurs. I also made a colour variation as a 'radioactive' patch of grass.



My updated scene with the new materials and textures, and the book variants I made to scatter around the scene.

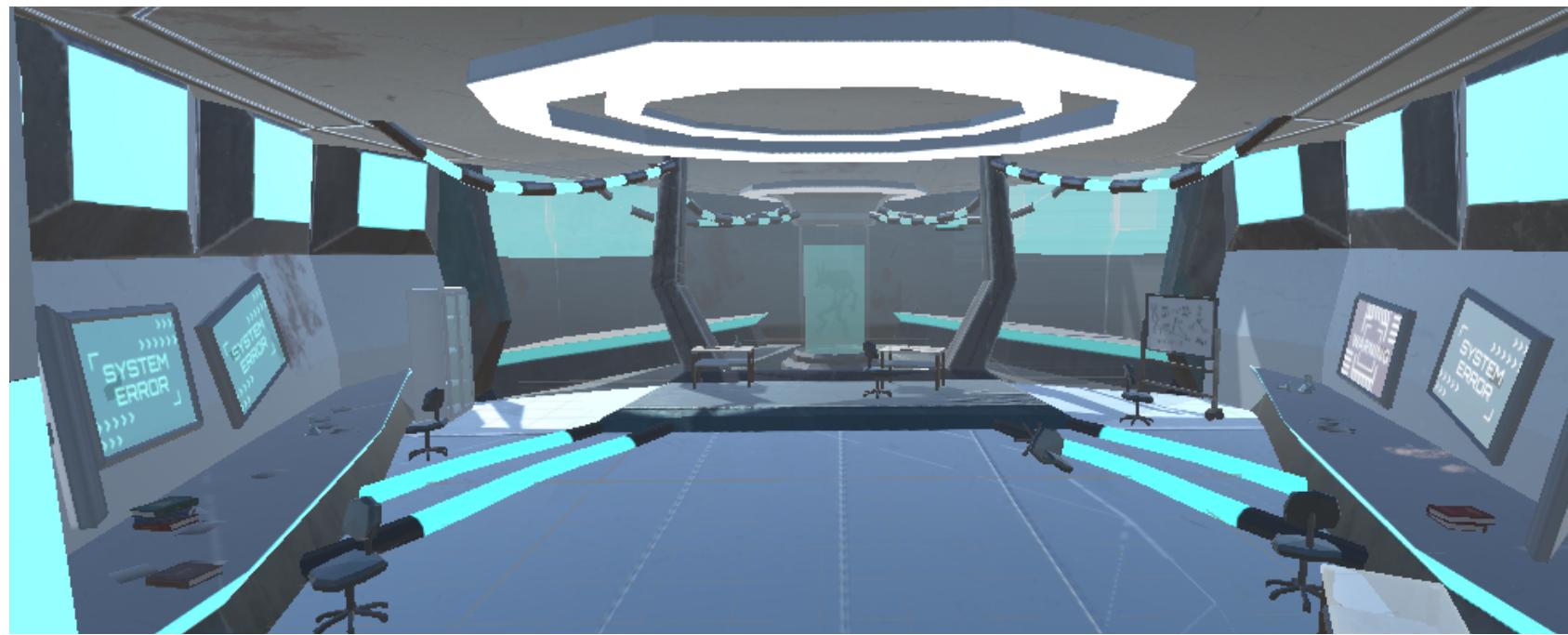
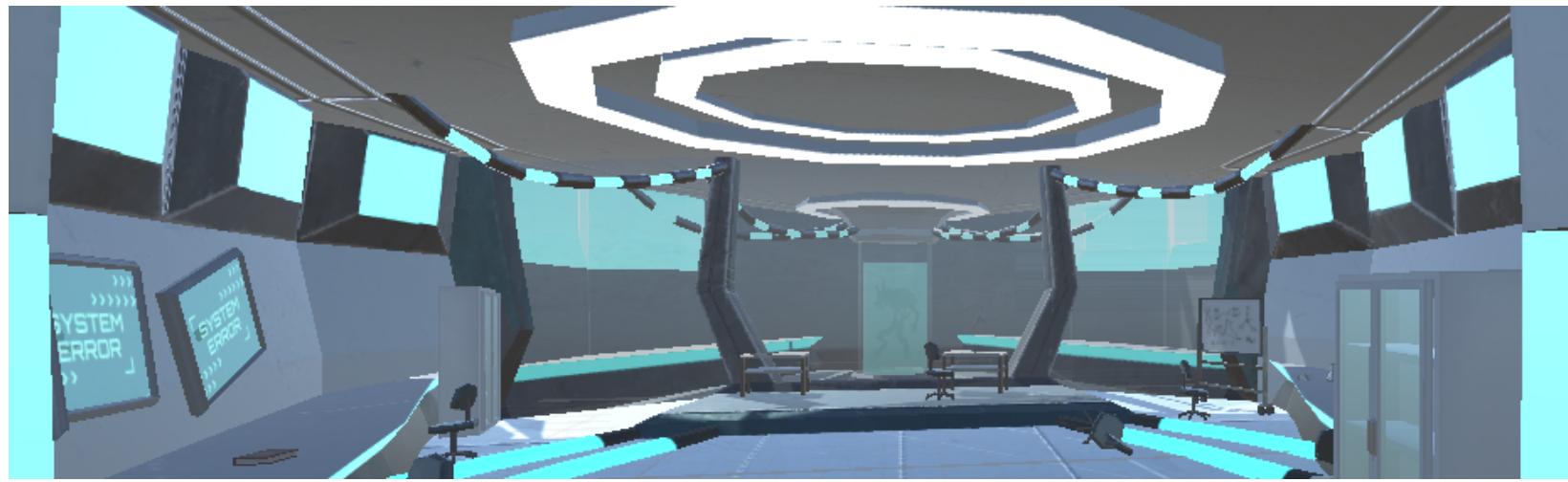


Texturing props to put around the scene - coffee stained paper, blood stained paper, and a dirt plane.

I created the papers using a gradient and a text alpha pattern, using a latin text generator just for placeholder text. I added a layer on top, using the handprint and coffee stain alphas with a different roughness to create the patterns, and changed the height and roughness of the letters to make it look printed with ink. For my dirt stain, I used an opacity channel to paint on a transparent layer, using watercolour and rough brushes to make dirt and grime stains, then altering the colour to a neutral brown, with a high roughness to contrast against the glossy white of my laboratory.



Placing paper as prefabs around my scene.



Populating the scene.



Adding models for interaction, starting with rounded buttons.

I used the mesh of the tank liquid to make the buttons, and applied a glowy, semi-transparent material on it to make it stand out.

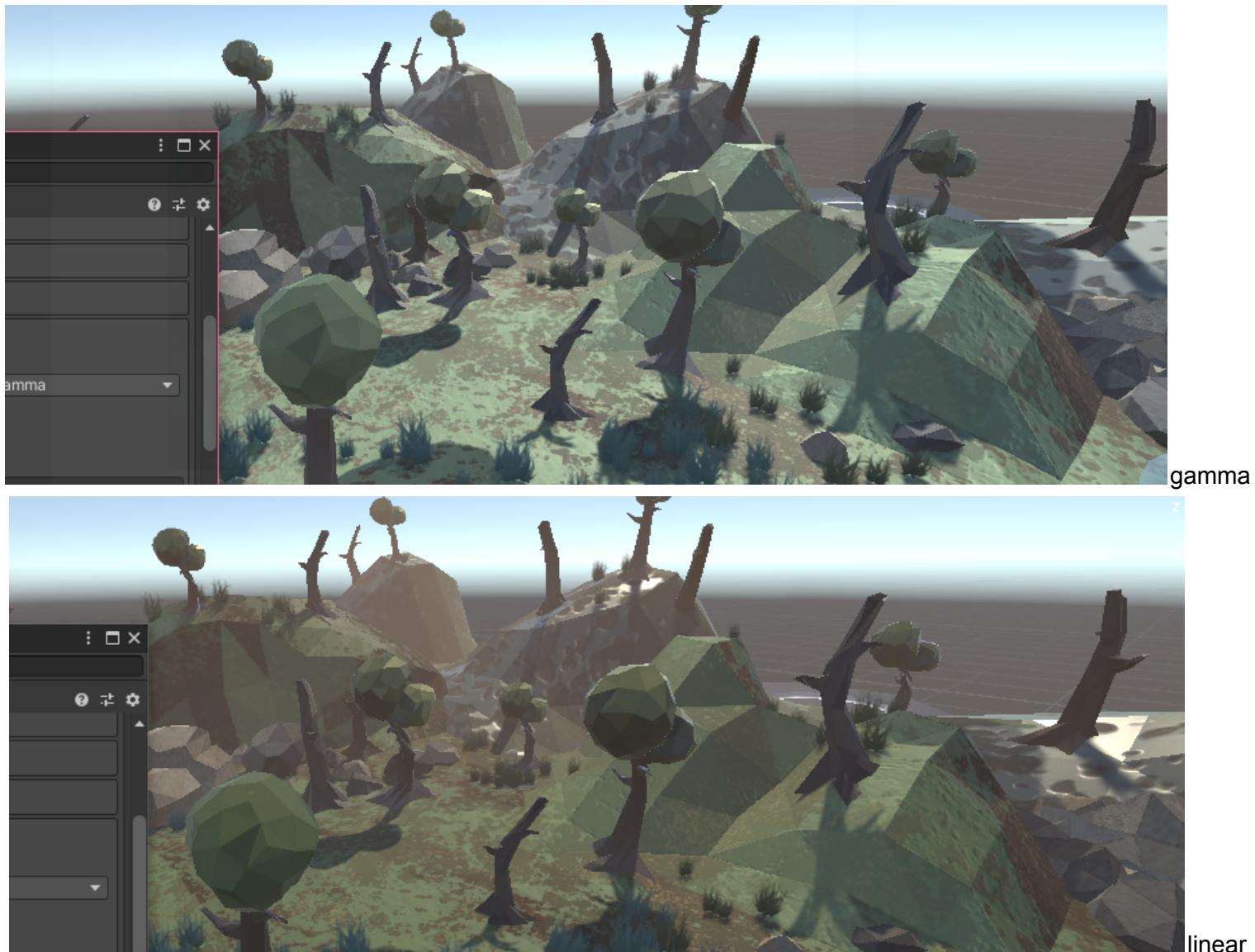
Scene Additional Setup

Planning the noises used in each section, divided by ambient, spatial and interaction noises.

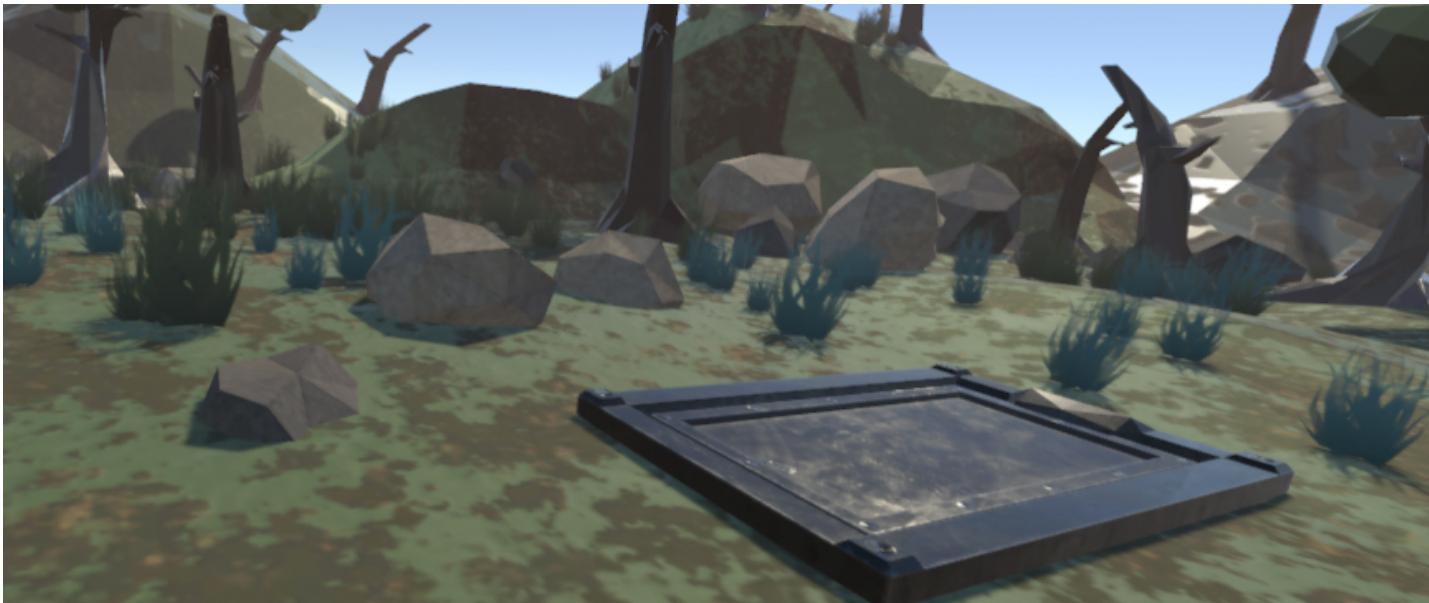
FOREST	LAB
<p>Ambient Cricket/wildlife ambience - https://freesound.org/people/Arctura/sounds/39829/</p> <p>Spatial Frogs towards water - https://freesound.org/people/Tito%20Lahaye/sounds/83527/ Running water - https://freesound.org/people/digifishmusic/sounds/43760/</p> <p>Interaction Squeak of hatch opening - https://freesound.org/people/thencamenow/sounds/31240/ 'Collecting' sound (when player picks up the key) - https://freesound.org/people/IndigoRay/sounds/331719/ Metal rattle when player tries to open hatch but doesn't have key - https://freesound.org/people/lolamadeus/sounds/161230/</p>	<p>Ambient Hum of technology - https://freesound.org/people/qubodup/sounds/212025/</p> <p>Spatial Bubbling towards tank - https://freesound.org/people/InspectorJ/sounds/412843/</p> <p>Interaction Success beep - https://freesound.org/people/jungle/sounds/26777/ Fail beep - https://freesound.org/people/Splashdust/sounds/67454/ Page turning when reading text - https://freesound.org/people/InspectorJ/sounds/416179/</p>

Hover

- Ping/small beep
- <https://freesound.org/people/pan14/sounds/263133/>



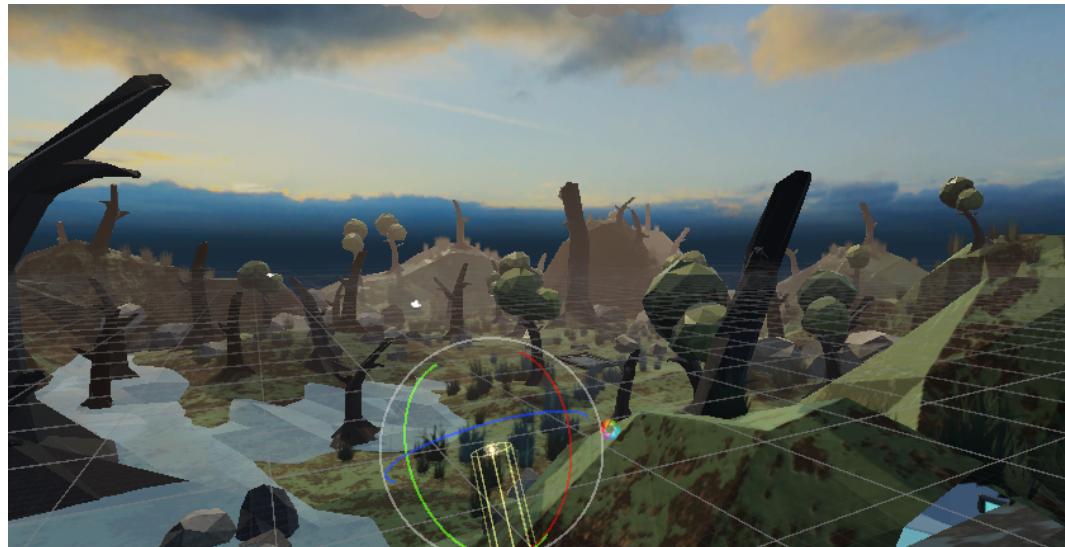
I decided to go with linear colour space as it made my lighting more realistic and less flat, while remaining colourful to look stylised.



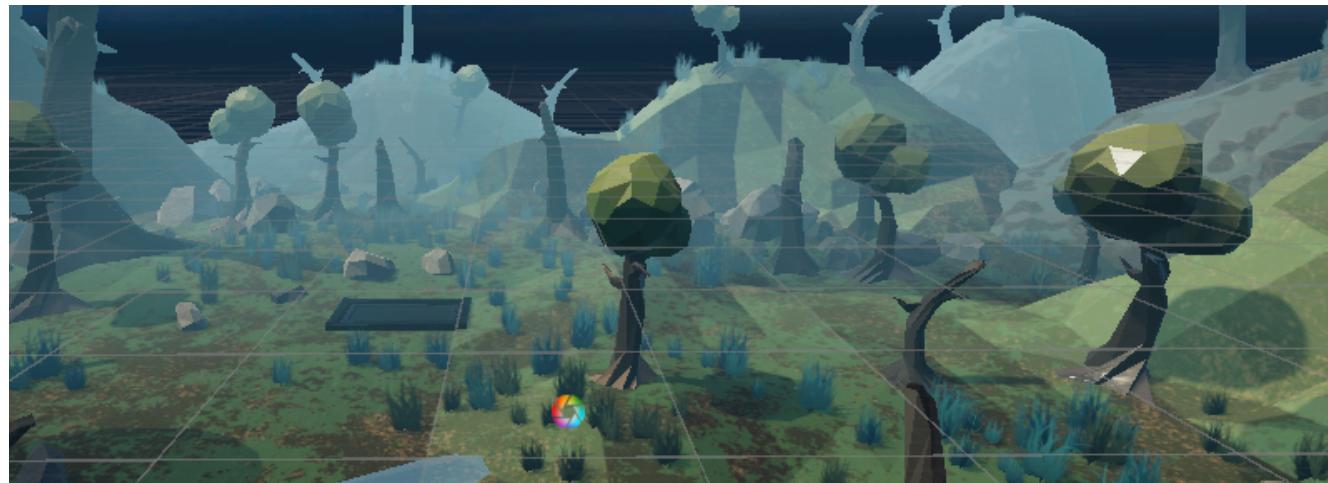
After inserting a post processing layer my camera looks kinda foggy, which I like, as I feel it makes my scene look nostalgic. The colours blend well together, looking more natural while still remaining colourful.



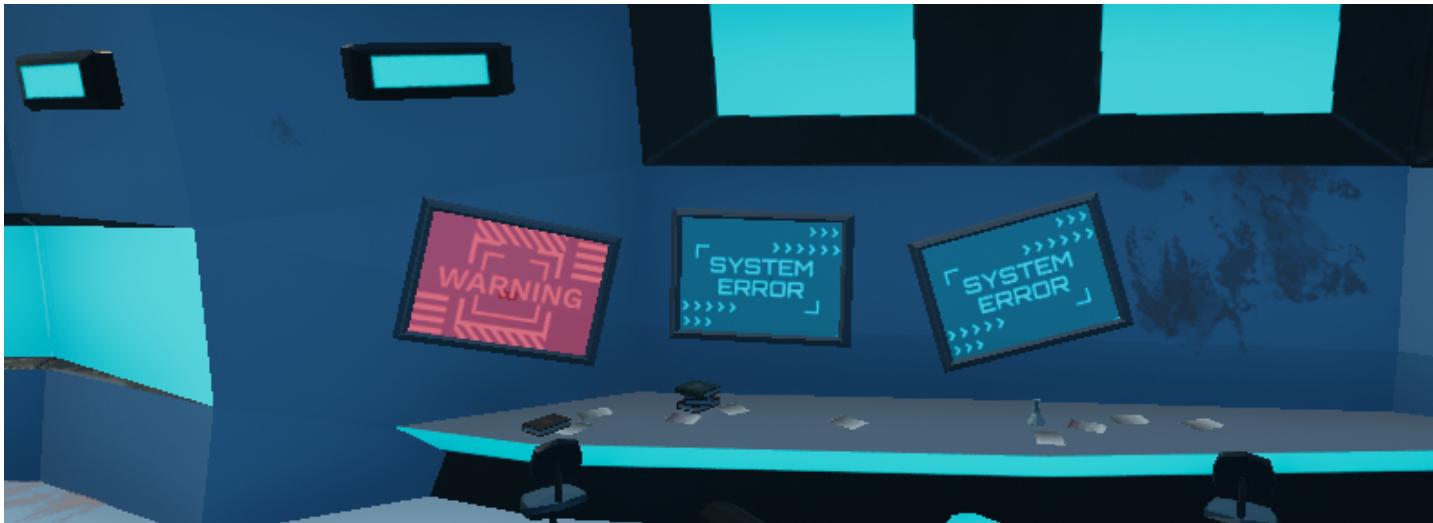
Configuring the post processing layer and post processing volume, which makes my scene a lot darker.



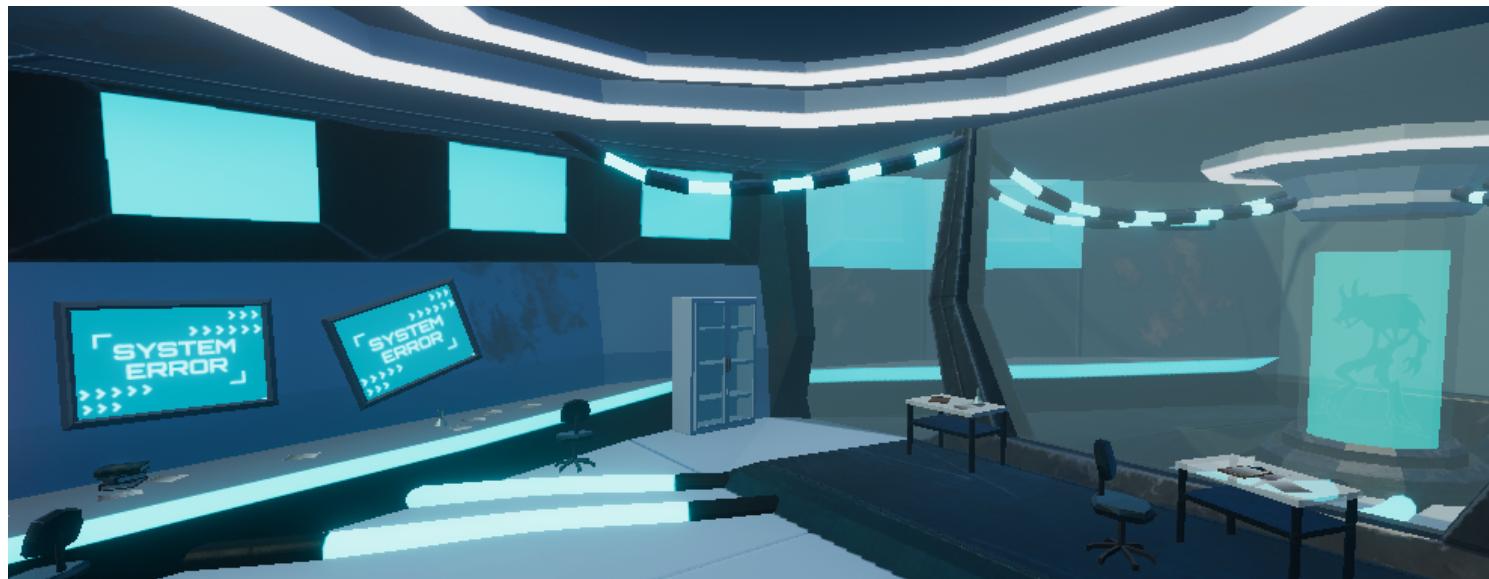
Adding a custom skybox, using the sky images provided, and changing the direction of the light to match the position of the sun.

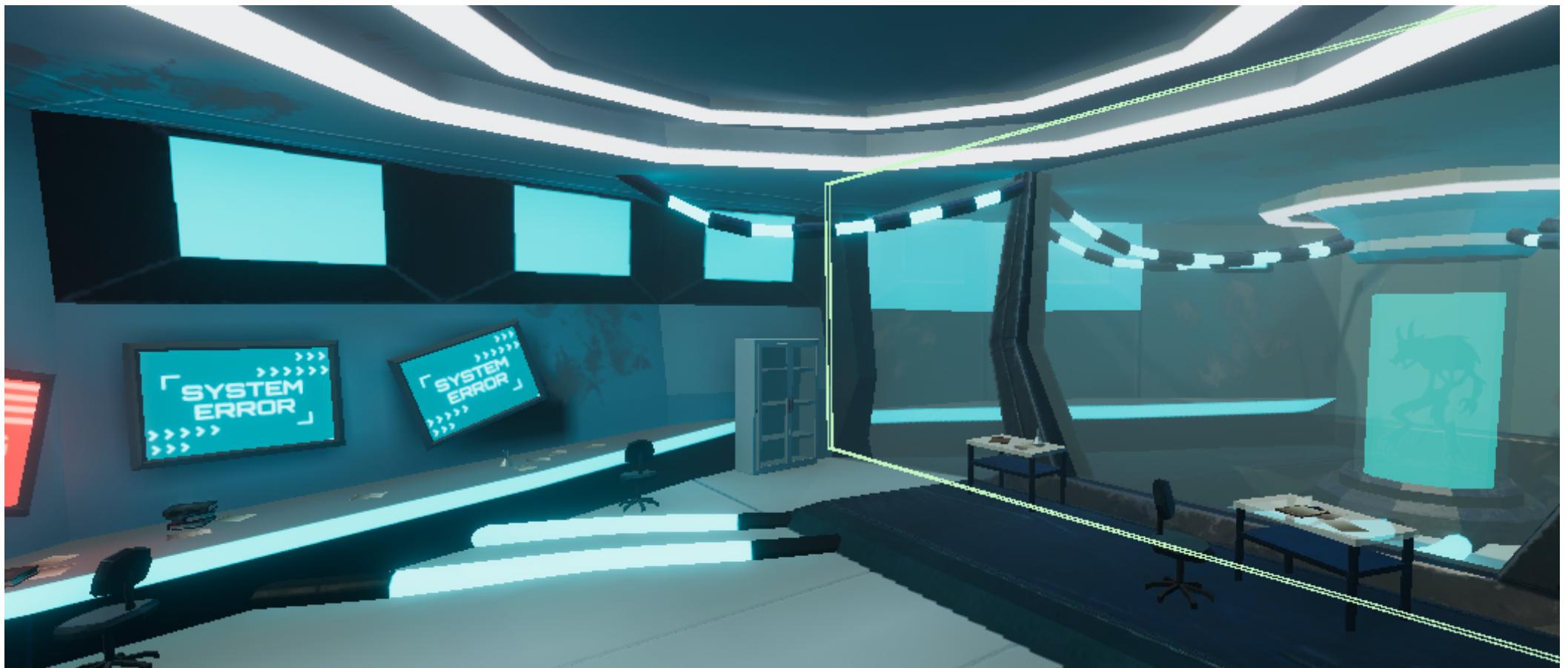


Changing the fog to a blue colour to make the scene more mysterious and less warm and inviting, and also to better match the lights of the lab. I also used the post processing layer to emphasise these ideas further, reducing the temperature to a cool blue, and bumping the saturation and contrast in an attempt to recover some of the colour that was lost when reducing the temperature.

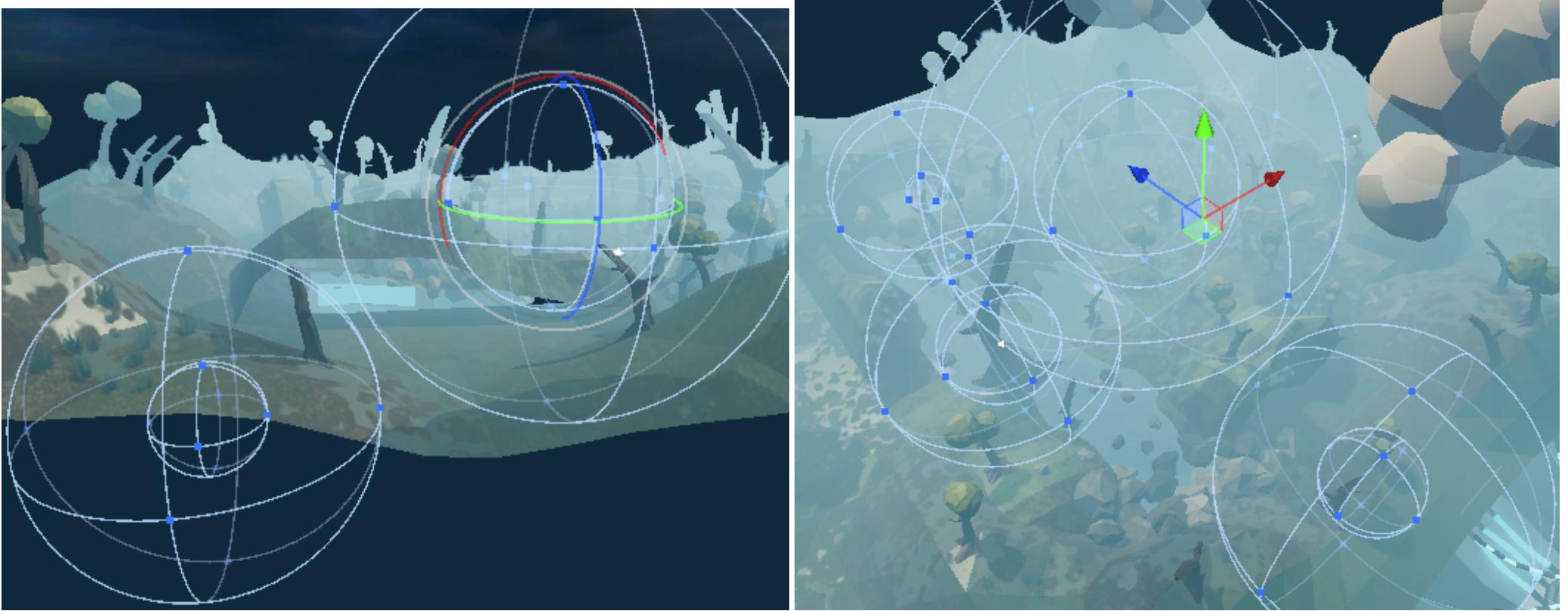


I then added AO to deepen shadows, especially in the lab which lacked the direct directional light that the forest had. I also realised at this point that I hadn't been setting up my emissions properly, I had just been importing the emissions map, and not changing its intensity, thus none of them were actually glowing.





I then generated the lighting after properly setting up emissions.



I then set up two spatial audio sources as my 'ambient' sounds, using two really large areas to try and keep the sounds isolated to each section. I tried to research how to separate ambient sounds into different spaces, but couldn't figure out how to.

Then I added spatial sounds, running water in the lake, frogs croaking in a rock quarry, and the tank of the lab bubbling.

For all these sounds I turned off doppler, kept a high spread value, and altered the graphs to try and make the sounds more gradual.



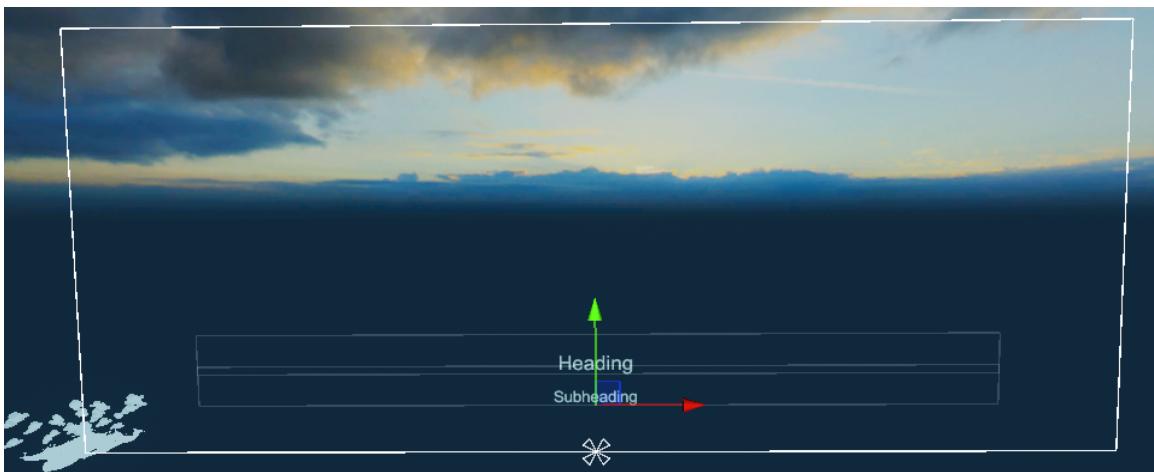
Then I added a dome of stars using the tutorial notes, adding a particle system with few and very small stars, as I imagined that my scene is set near dusk, when the stars are still out. I considered using the bird particles instead, but I thought this subtle effect would look nicer.



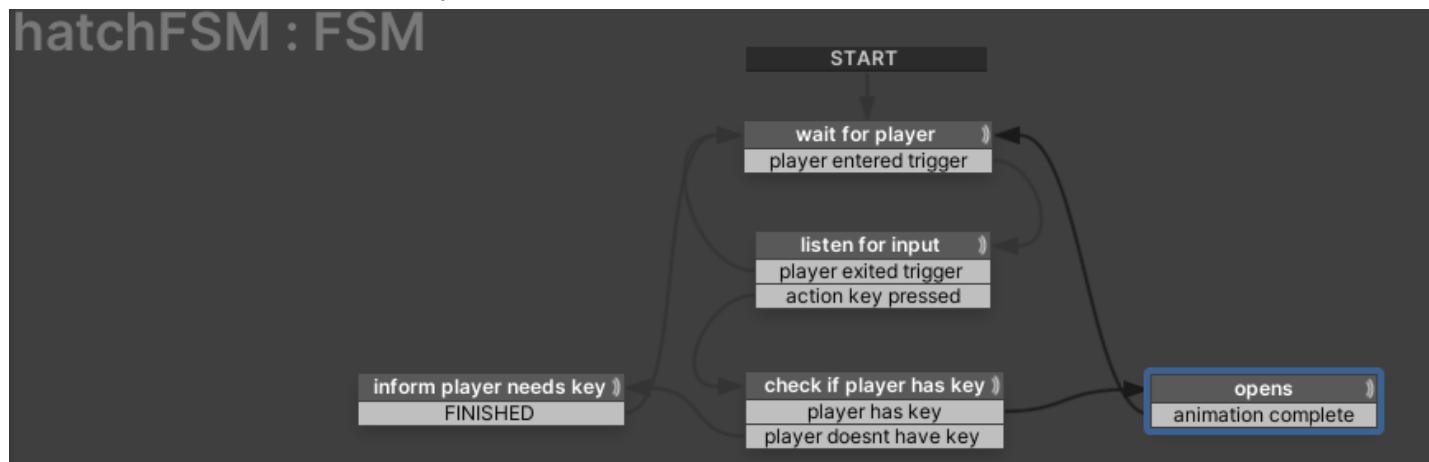
Next I added blue firefly particles, creating custom particles to make them more glowy and emissive in comparison. I made these very few and small, again to keep the effect subtle. I also went back to the stardome and used the same custom firefly particles in a different colour to make them more glowy.

Something I've realised at this stage is that thin planes of my scene (the water, paper, and my dirt 'decals' in my lab) flicker over each other nonstop. Despite me trying the following methods in [this forum](#) (unticking gpu skinning) and [this forum](#) (increasing the near value of clipping planes in the camera), neither worked, so I just had to accept the flickering. :(

Playmaker



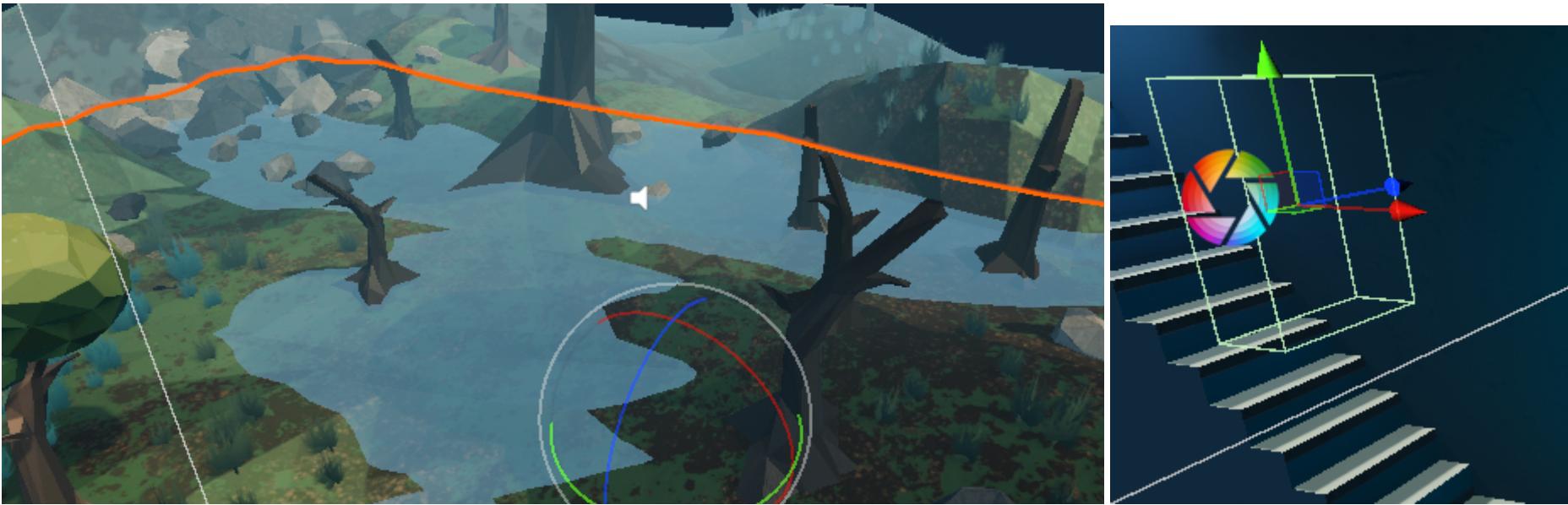
I started by setting up the UI text boxes of my scene to create my first FSM, showing welcome text as the scene started. I made the text quite big and a light blue colour, to make sure it wouldn't clash too hard with my scene.



I then added: The Ability to pick up a key,

Prompt the player to open the hatch, but they can only open it if the key has been collected (using a global bool variable).

I also set up the custom mouse cursor with a crosshair, and three mouse states to integrate in later stages.



I then added a small 'wave' animation for my lake, just to add more motion to my scene, by making a looping animation of a subtle rotation.

Then I added the following FSM:

- Welcome text when player enters box trigger on the lab stairs
- The ability to turn on the ceiling lights by pressing a button at the entrance

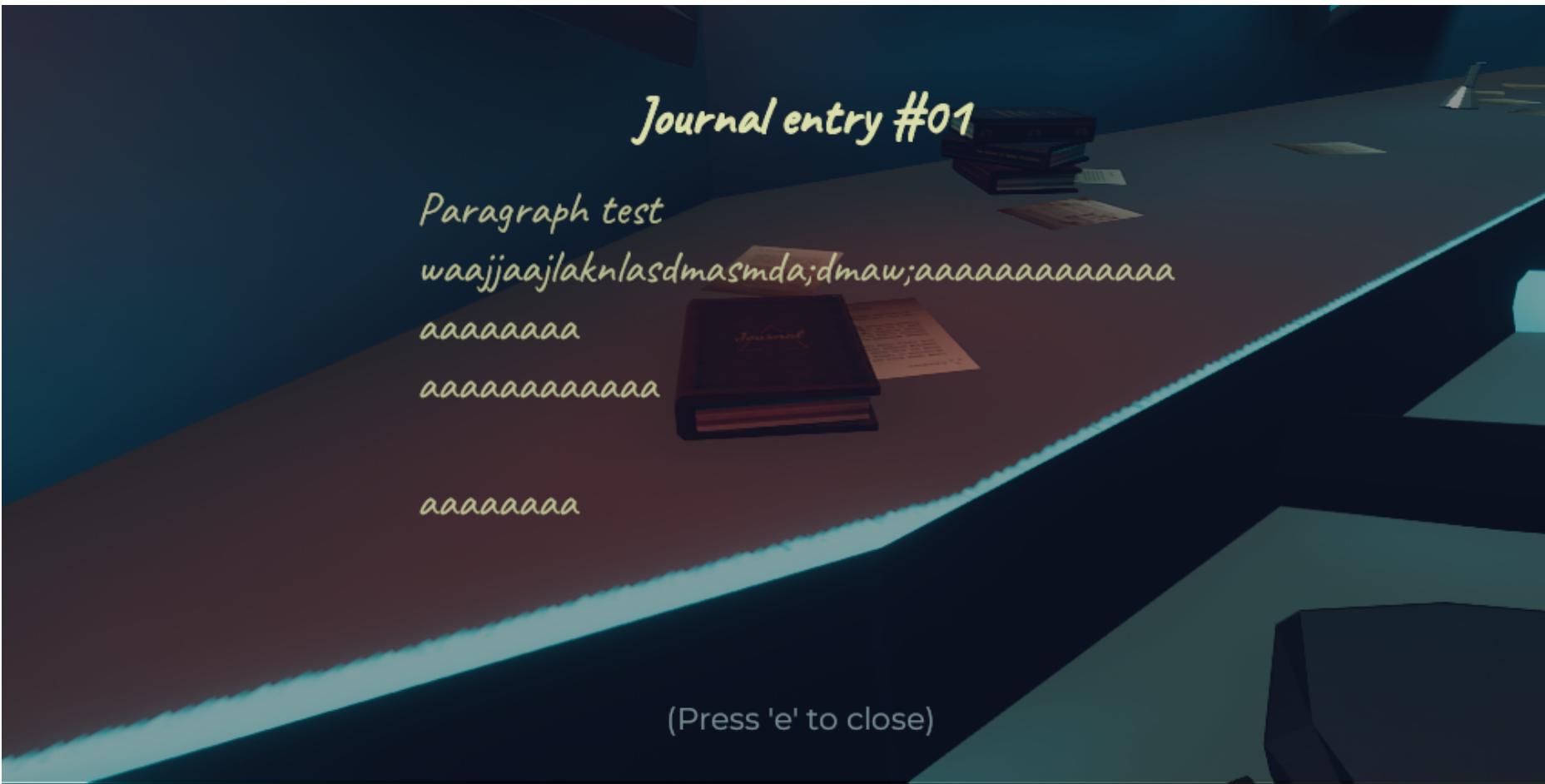
I went to find some additional sounds, just to make my scene more interactive.

Cupboard opening - <https://freesound.org/people/InspectorJ/sounds/431117/>

Light button - <https://freesound.org/people/jungle/sounds/26777/>

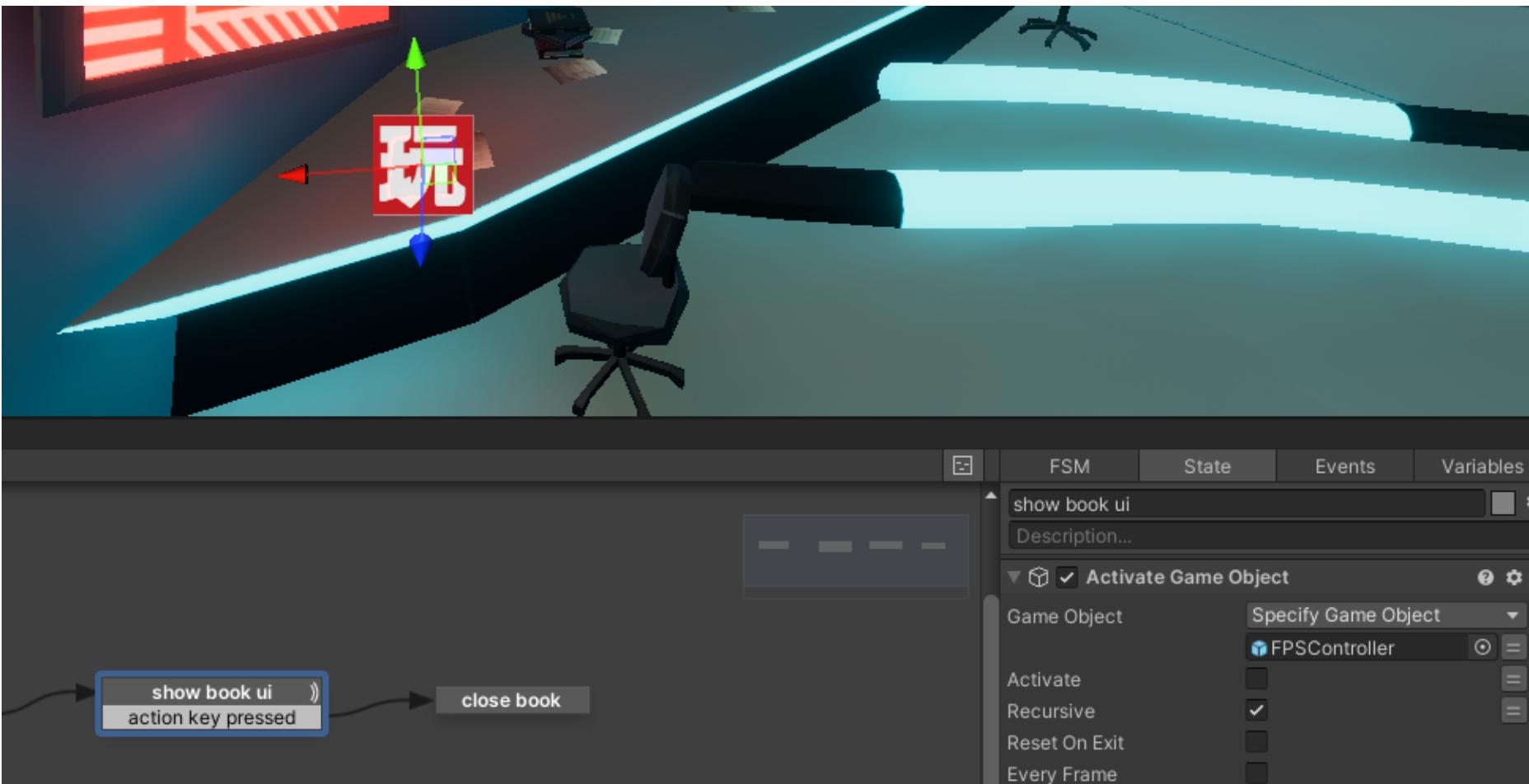
I also decided at this point that I should use custom fonts just to make my scene more personalised. I decided to use [Montserrat](#) as my main font, as I thought it was modern, while still remaining simple enough to work as UI text. I chose [Caveat](#) as my font for the book UI, a handwritten font that felt rough enough to look like handwriting, but still neat enough to be uniform and decipherable.

I got both fonts from Google Fonts, due to their range and also all fonts being open source.



My final book UI. It consists of a semi transparent black overlay screen, a heading text box and body text box. I kept the font smaller than the complete screen width to try and emulate the vertical shape of a page.

I also arranged it so I could use my UI subheadings to make an action key description.



I tried to make it so that when you opened the book, the player character would be frozen in place (So they couldn't walk around with the book UI on top). I experimented using this [forum post](#), tried to spawn in boundaries, and tried to disable the fps controller to restrict movement.

However, without a camera it lost all vision, so in the end I had to give up on restricting the player movement. :(

Now that my book UI works, I need to write text for my books to contribute to the plot and backstory of my scene.

Journal entry #01

Experimentation begins today. Patient [REDACTED] is apprehensive and annoyingly fearful. I've had to make some compromises and lie about his procedures - make sure to prioritise memory wipe technique first, will reduce irritation in the long run.

I am finally going to see my life's work put into action. I need to be careful and move slower with this one, the previous one was flimsy and fragile. Need to maintain his mental state, if I am patient and disciplined this could be my best work yet.

13.02 Lab report

CODENAME: Cerberus

ABILITIES TO IMPLEMENT:

Enhanced agility, night vision, Enhanced strength, quadrupedal form

TECHNIQUES:

Limb reattachment, restructuring of tibia and fibula bones. Inject muscle-growth formula directly into the femoral artery.

Eye surgery, replace optic nerve with synthetic.

Infuse fluotriino-based acid into the bloodstream.

21.07 Lab report

The experiments conducted on the 13th of February were a complete success. Still running diagnostic tests, but Cerberus is incredibly fast, and even faster still with his new quadrupedal legs. His eyes are still recovering from surgery, keep eyes blindfolded to prevent further damage.

I cannot be more ecstatic. Cerberus is now a beast of a man with powers unimaginable to a normal person, my technology has evolved a human into a complete predator of immense power and strength.

However I can improve him further. I have further tests to run.

Journal entry #13

Experiencing small setbacks. Cerberus is having issues with his synthetic optic nerve, and his eyesight along with his speaking ability has declined significantly. Internal bleeding is putting his organs through immense pressure. He is frequently plagued with seizures and spasms, coupled with his newfound strength has maimed my staff.

I don't understand where these side effects have come from, I've been following the studies of Simmons and Cooke comprehensively, and these issues have never been documented. Perhaps the subject is incompatible with my experiments after all, I don't know what else it could be.

Journal entry #25

Cerberus has mutated into a creature beyond my research and reasoning. The keratin injection to make his nails stronger and sharper have extended into claws, and horns have protruded from his skull.

His internal organs have completely ruptured, and he has become increasingly aggressive.

I cannot approach him to replace his entrails with my synthetic ones. Without proper organs, his body is beginning to decay and rot. I am getting desperate. Cerberus is the most successful work I have ever produced, I cannot lose all my progress.

Final entry.

Cerberus is beyond repair. We have had to suspend his body in a coma-like state. He has become so hostile and volatile that 2 of my team have been murdered by Cerberus in his fits of rage. The others have abandoned my project.

I am being increasingly pressured by their families to explain what has happened to them. I cannot give an explanation without exposing my laboratory and thus Cerberus. They will attempt to destroy him, but will be easily overpowered. I cannot risk my own creation bringing death and destruction to many, but I cannot destroy my proudest achievement.

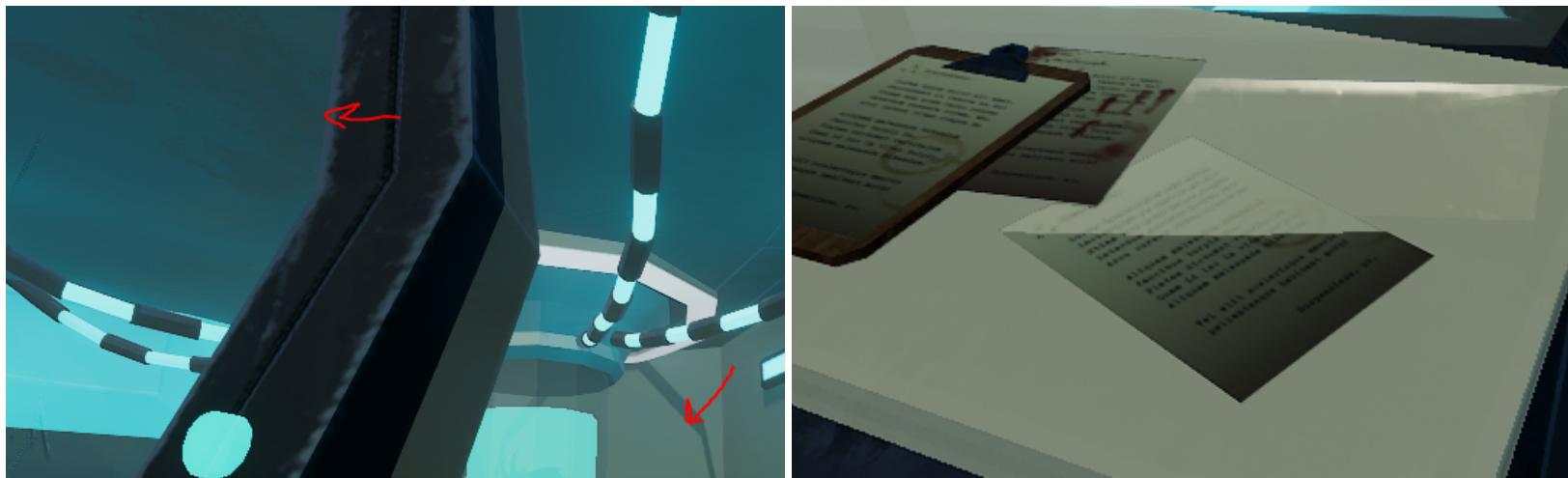
I leave behind my laboratory, forever preserving my magnum opus. Goodbye.



I then set up all my FSM's for my books and paper, trying to establish a sequence from the ordering of my objects. The very last entry is hidden within the cupboard in the back corner of my lab, while the very first journal entry is of a book at the entrance of my lab.



I added a particle system for bubbles within the tank, and made a small bobbing animation for the monster, just to make it less stiff.



Final touches, walking around as the player to look for issues. There were quite a few flickering planes (the same issue I mentioned earlier), so I fixed these by just manually adjusting each plane until they didn't flicker anymore.



Another issue I found was a gap in my mesh from when the player goes down the stairs.



I fixed this by placing a plane and applying a new white lambert material. It doesn't look perfect, but it's much better than being able to see through the mesh.

When making my cutscene I realised I needed more sounds, thus found the following:

Growling

- <https://freesound.org/people/Sea%20Fury/sounds/48688/>

Warning beeps

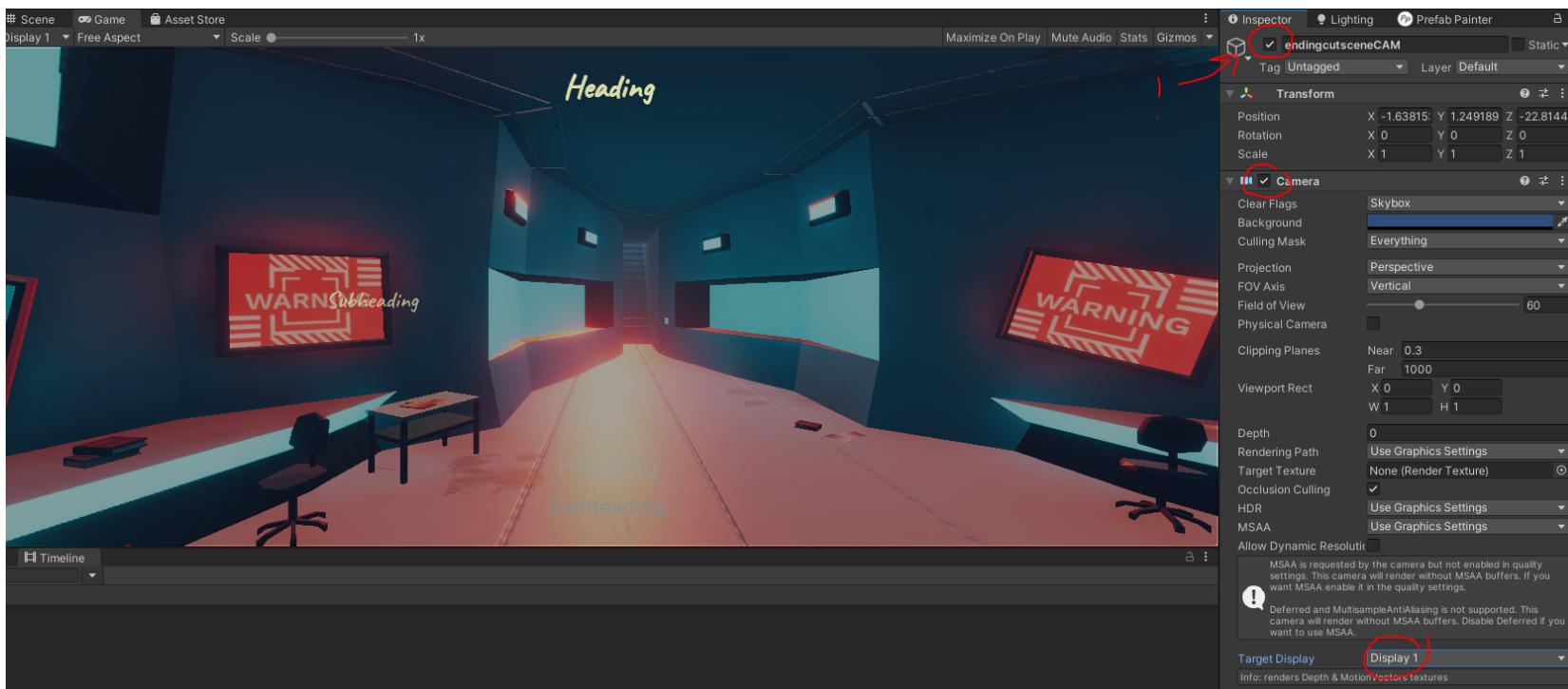
- <https://freesound.org/people/onderwish/sounds/470504/>

I also reused the previous sound of my hatch opening for the whiteboard falling onto the ground. I tried to animate a player attempting to leave, but turning around when hearing a growl behind them. As objects start to fall and clatter they run for the exit before the growl gets closer and they fall to the ground.



To activate my cutscene I made a box collider at the stairs. When the player entered the trigger, it would run a check on my variable to check whether the last (and most pivotal) entry had been read, if not it would just reset, if it had been read it would play the cutscene and disable the FPScontroller, change the materials of some objects to a red glowing material, and would show the directional red light I placed within the lab.

I used the fade to black option to fade out my cutscene, and then the application would quit.



However, an issue I came across after exporting is that my camera is stuck on the cutscene camera, and I can't move my character. I tried to fix it by unticking the camera and changing the target display, which gave me access to my FPScontroller again, but during the cutscenes nothing would show. After trying many forum methods and attempting to set up my FSM's again, I realised that all I had to do was untick the top right box...



Next thing I noticed was that in my build, my text was so much smaller than it was in my Unity file. I tweaked the font size of my UI , and rearranged all the fonts until it got to a position and size I liked.

Finally after exporting the build, my project is done!!
It was a lot of work but I hope you enjoyed the experience and my narrative :)