



L4 - ENVIRONMENT DESIGN (ACCA4032)

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Diorama ideas

My basic diorama idea was to be some sort of place under the ground or in a tunnel. I had two options as to what to choose.



[1]

My first idea was a car park area, with a lot of pillars and potentially with different floors and vehicles.

The next idea and the idea I went with was an underground sewer base, with liquid submerging floors and pipes around the area.

[2]



Further ideas

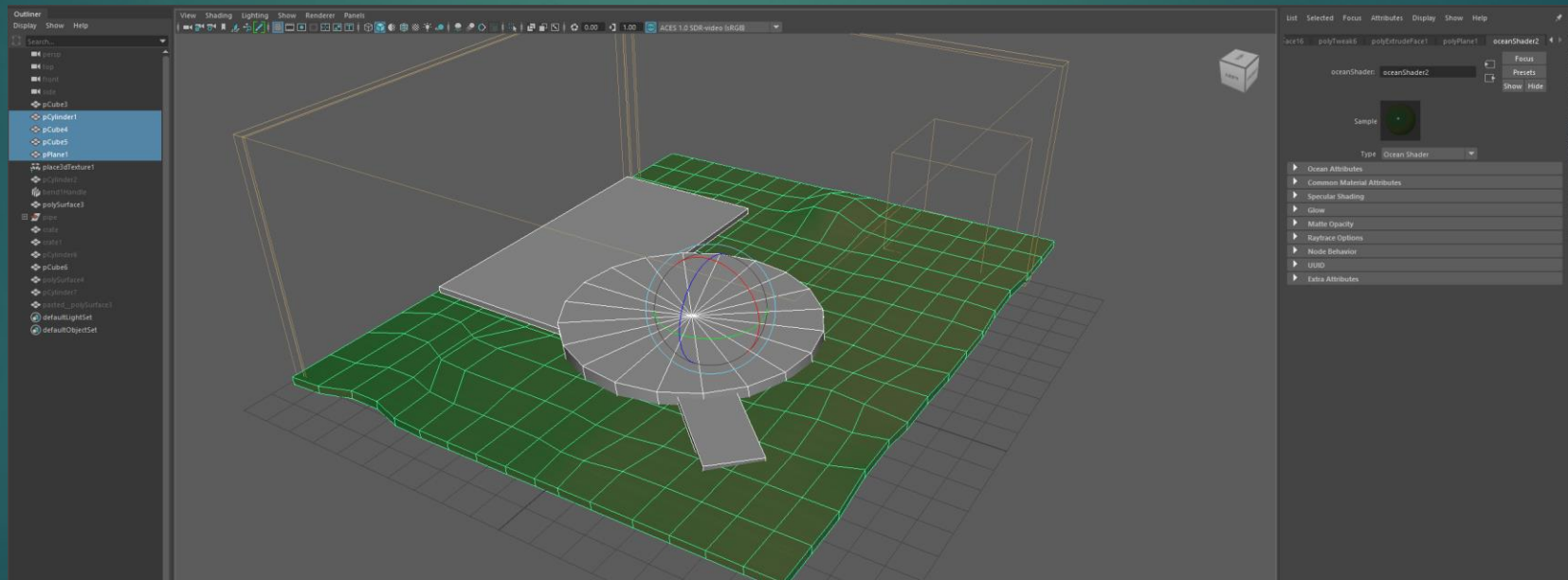
Continuing with the underground base idea, I was thinking of making my diorama similar to the Batcave from Batman. I was specifically thinking of the one from Lego Batman 2 as I liked how there was a branching path, and I was thinking the water could be like whatever other liquid I was going to have at the bottom.

[3]

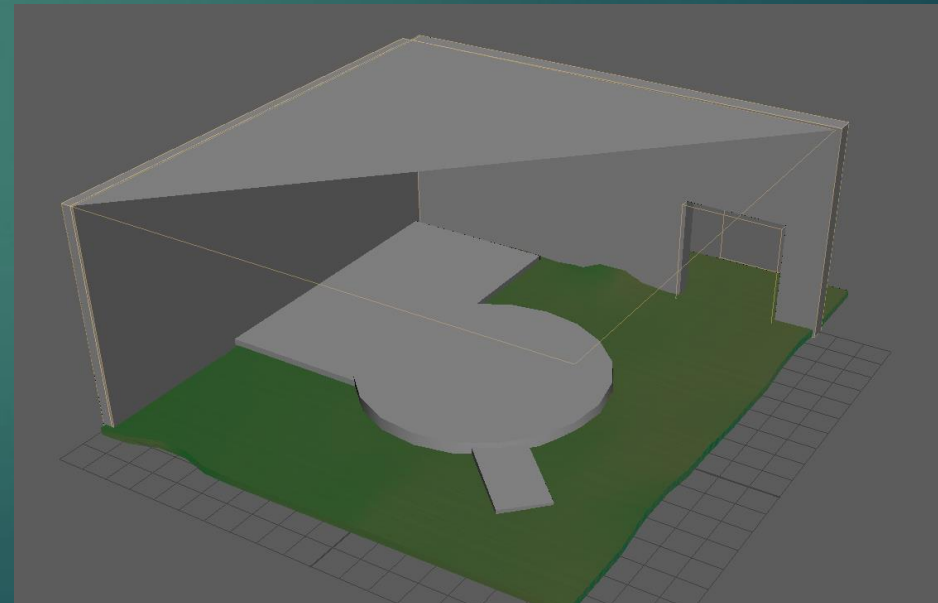


Creation Process

The first parts of the diorama I made were the floor and the liquid. The floor was composed of cubes and cylinders and the liquid was a plane which I extruded and later combined. For the time being, I put green ocean shader on it to resemble acid waste.

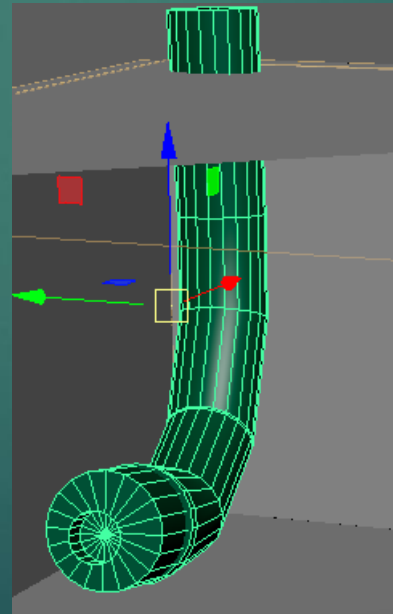


The next thing I made was the walls surrounding the area. It consists of one cube extruded to wrap around the corner of the diorama. I also decided I wanted an opening, so I made that by adding a cube to it and making a hole using the "Difference" Boolean option. I later tried creating a roof from another extrusion.



I then tried to create a giant pipe, which I imagine would function almost like a slide into the area. I was able to create a pipe by using the "Bend" tool on a cylinder to curve it.

A problem I had with the pipe was creating the opening. I initially tried using both the "make hole" and the "difference" tools, but I struggled to get it working on the initial cylinder. The solution was to make another cylinder, as the tools worked on this unbent one. I combined the two cylinders together using the "Combine Mesh" tool to make the pipe easier to transform.

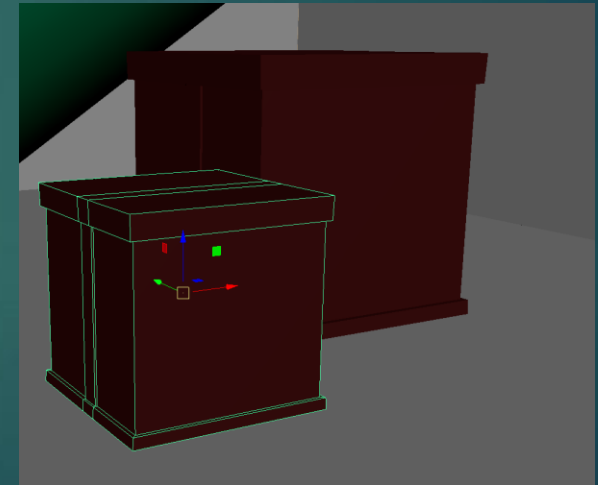


The next item I added to the diorama were the crates. These were created by extruded cubes, to make the top and base of the crate, along with a parts extruding from the middle. Before I added textures to them, the crates were given a brown Blinn material to differentiate them from the ground.

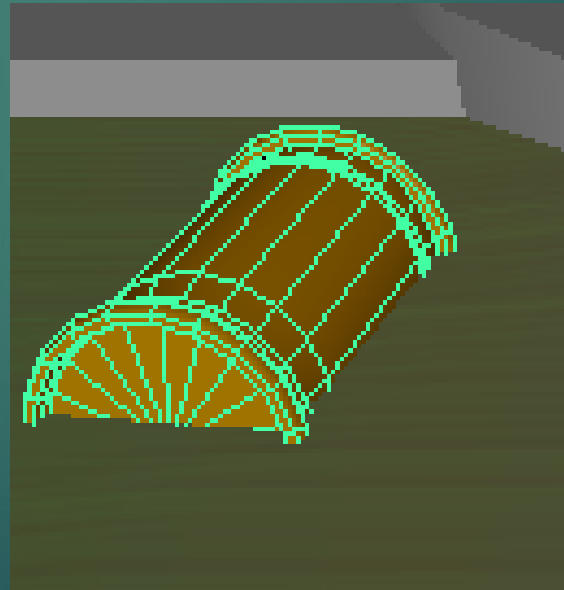
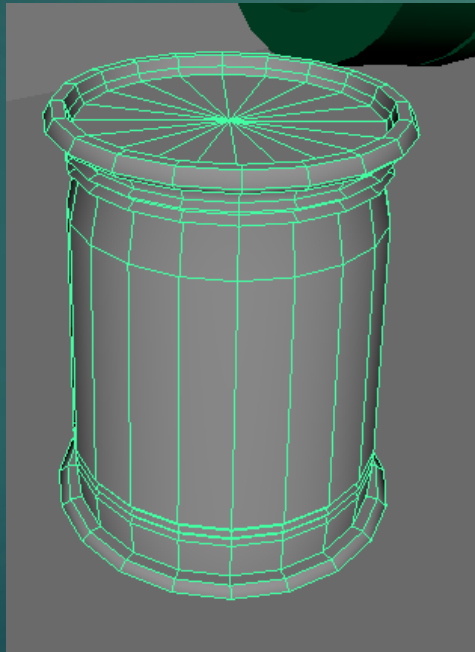


[4]

I loosely based the crates off this design



Another item I added was an oil barrel, which I planned to texture to be a toxic waste crate fitting in with the sewer. This was made from a cylinder, with a lot of thickness and offset extrudes to make the base and the bumps of the can. The way I modelled the barrel took heavy inspiration from a tutorial [5]. Mine was shaped somewhat irregularly but I was hoping the right textures would stylize it, so it'd look more fitting.

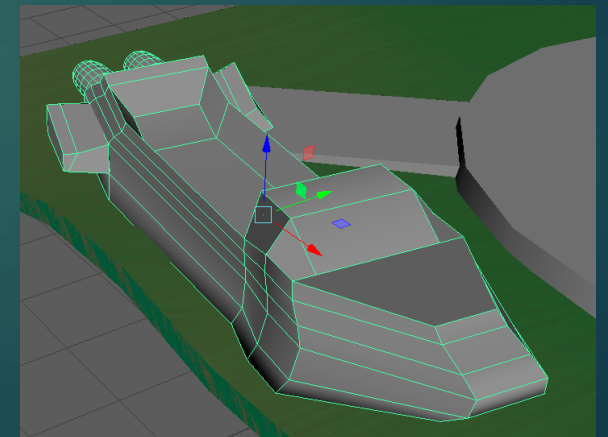
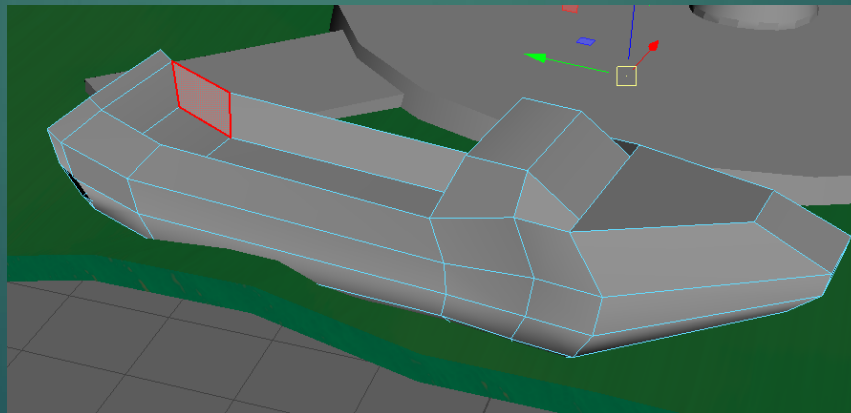
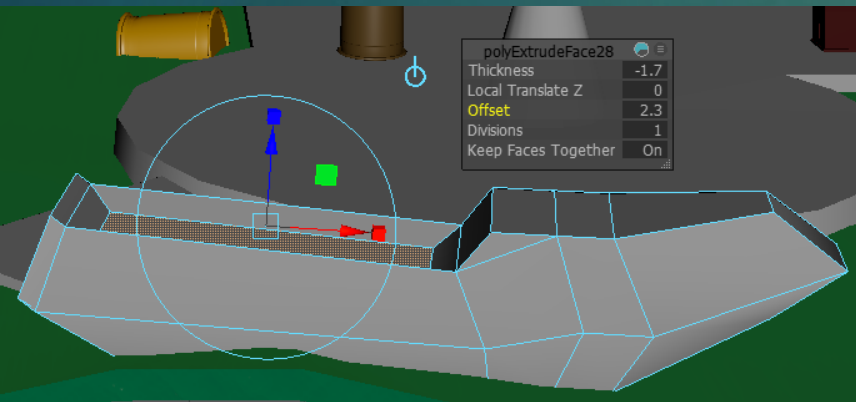


Barrel submerged in the acid

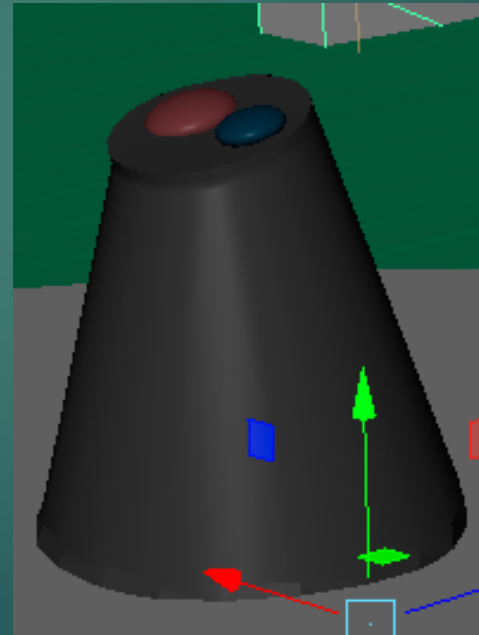
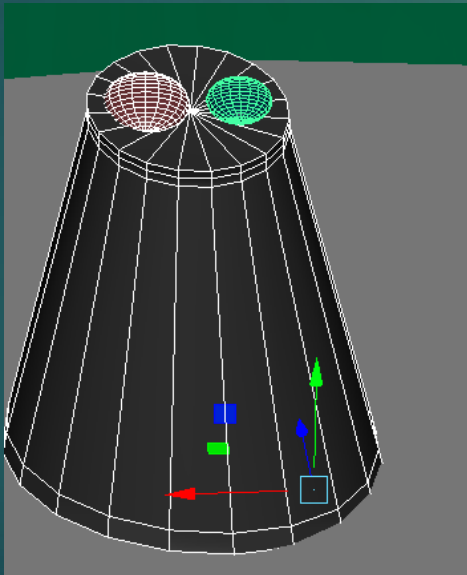
The largest object I added to the scene was a boat. It was composed from one cube, with multiple edge loops and extrusions to shape the boat. I later added toruses to represent the exhaust pipes.



The boat idea was based off this Teenage Mutant Ninja Turtles boat toy [6]. While I wasn't sure if the texture was going to replicate it, I tried to make the shape similar to it. However I wasn't able to shape the top end of the boat.

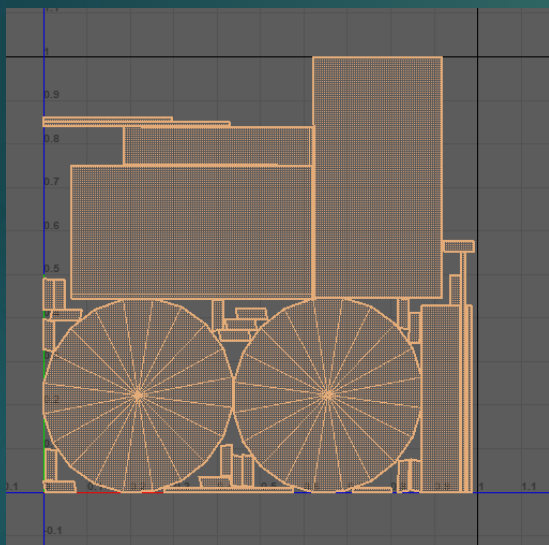


The last object I wanted to add was a control button to be on the circular platform, similar to the Batcave's computer in the middle of it's own circular platform. This was just a extruded cylinder with two spheres combined onto it. I was hoping the texture added later would help make it work.

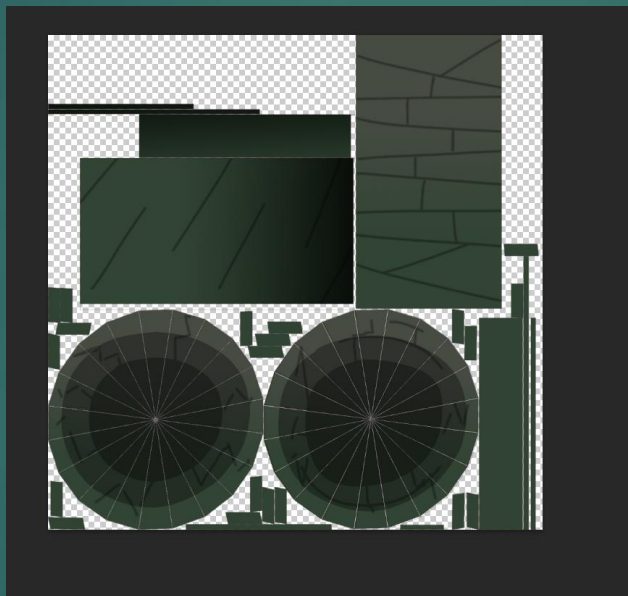


UV Unwrapping and Texturing

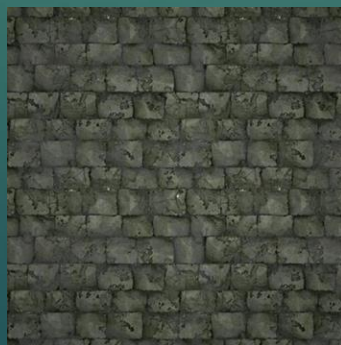
Floor UV Unwrapped



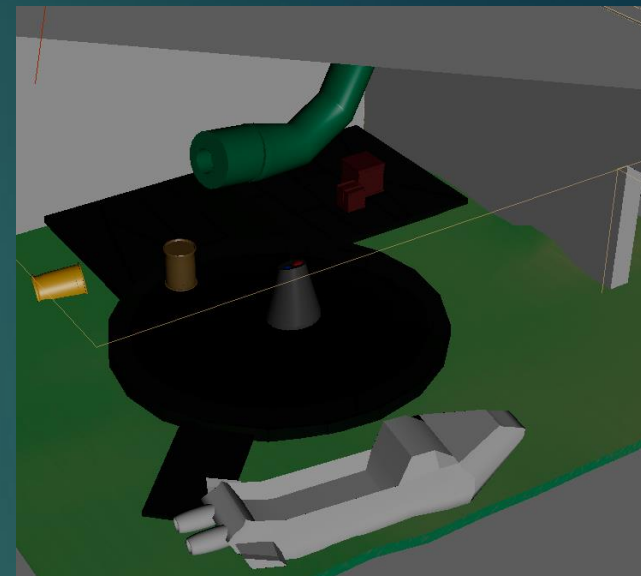
Floor texture



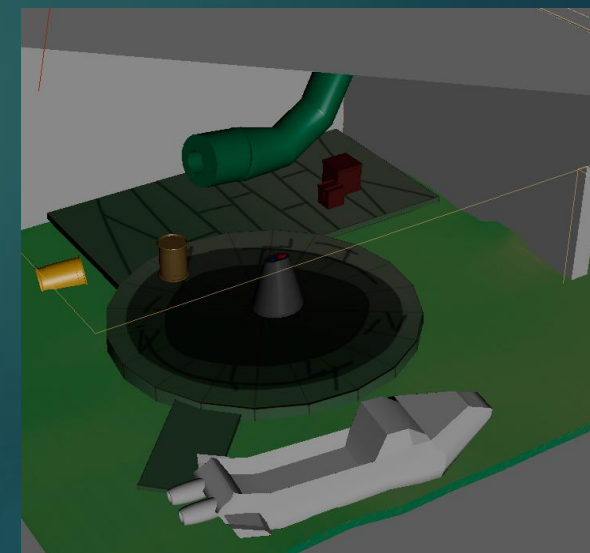
I made the floor texture myself,
based around off this tile [7]



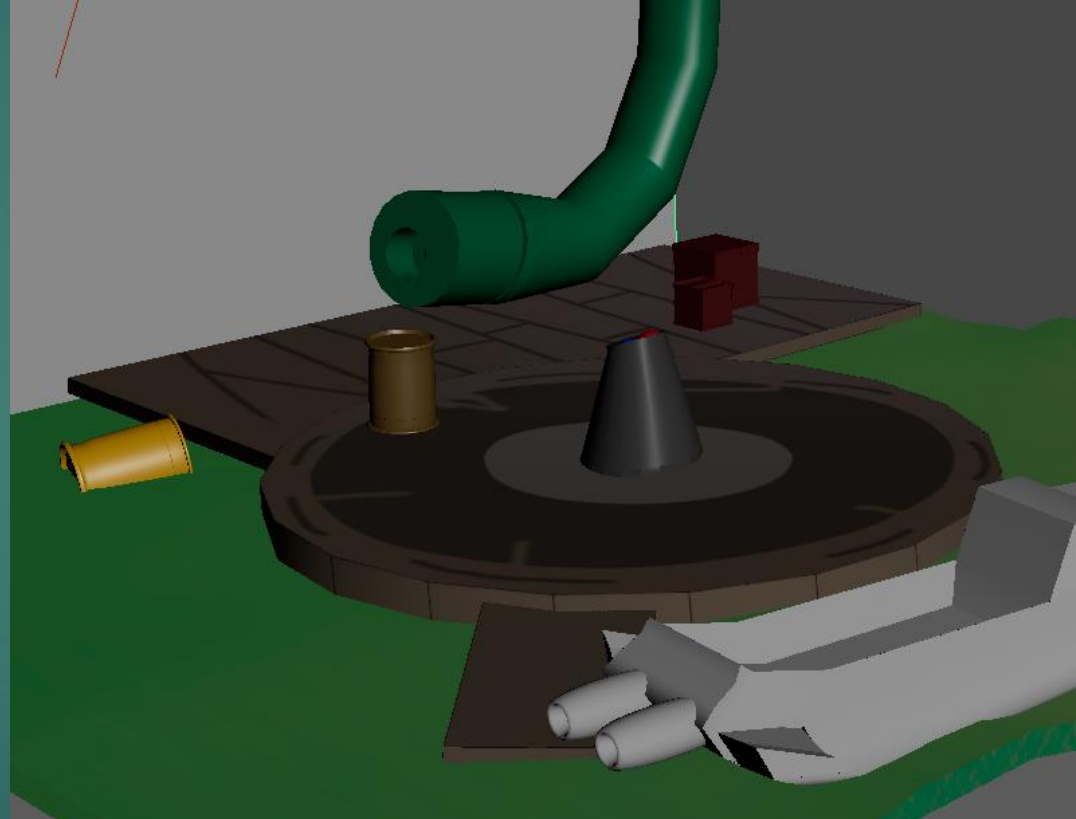
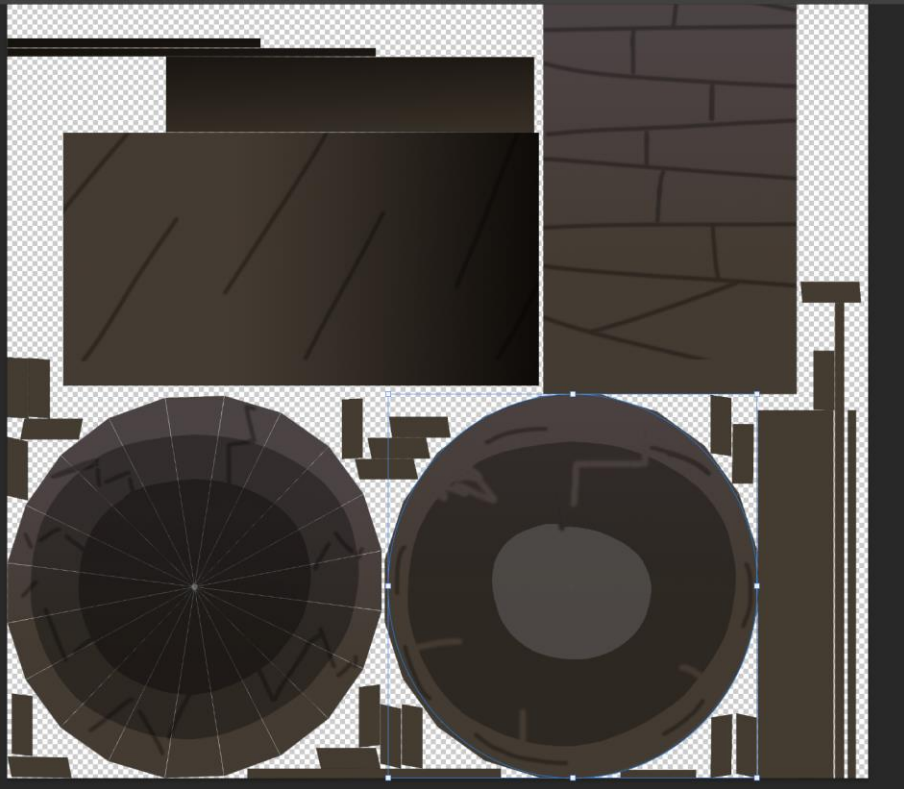
Floor
texture
onto
Maya

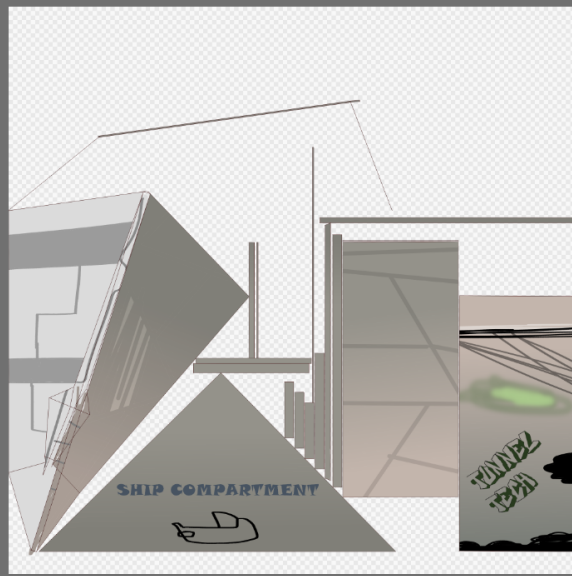


After
editing
exposure



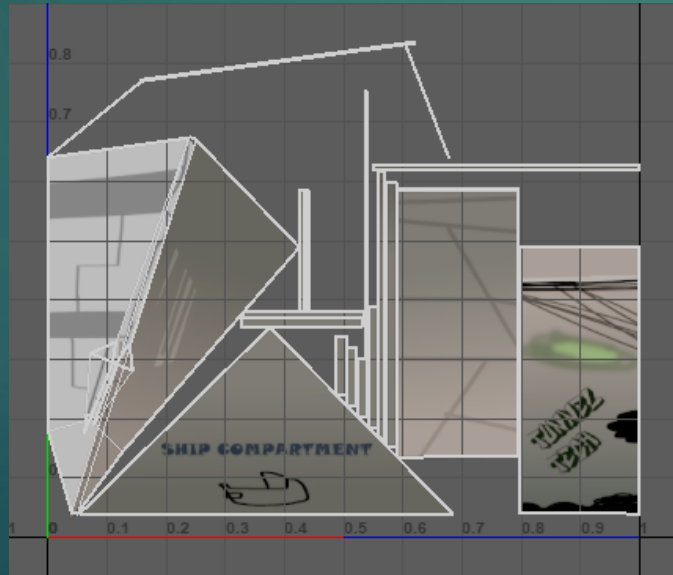
I later changed the color of the texture so it wouldn't blend in with the green acid.



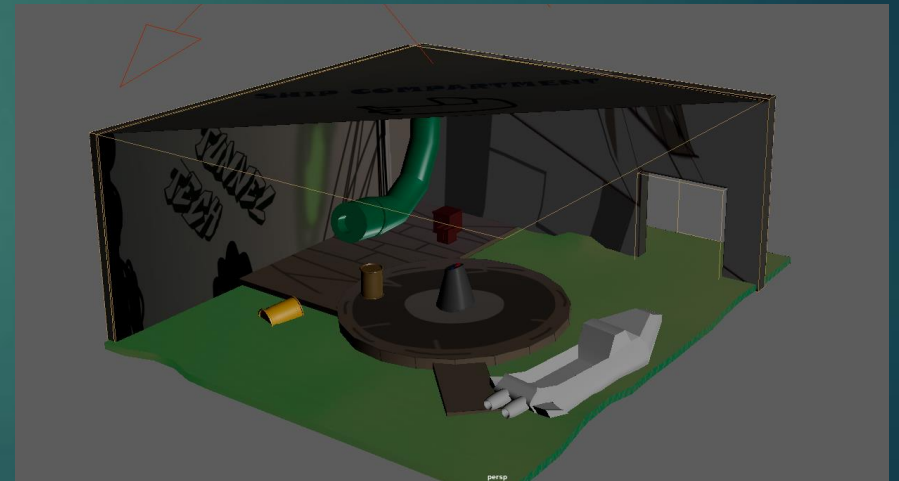


Walls Texture
Fonts used:
Showcard Gothic
Docallisme

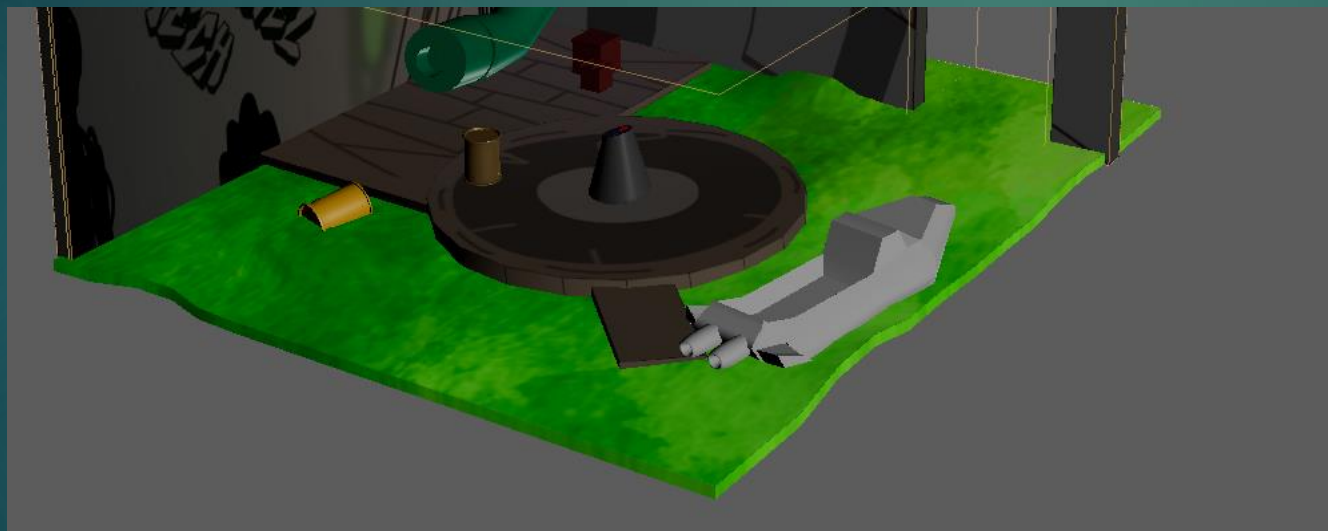
Walls on Maya UV



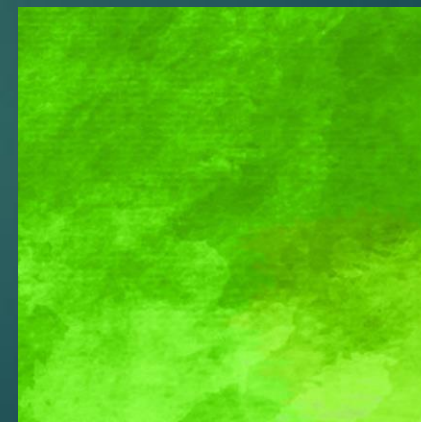
Walls Textured



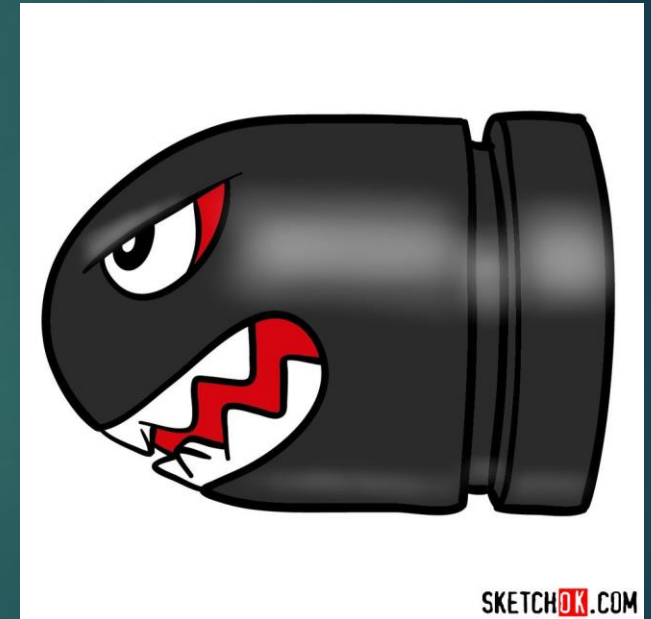
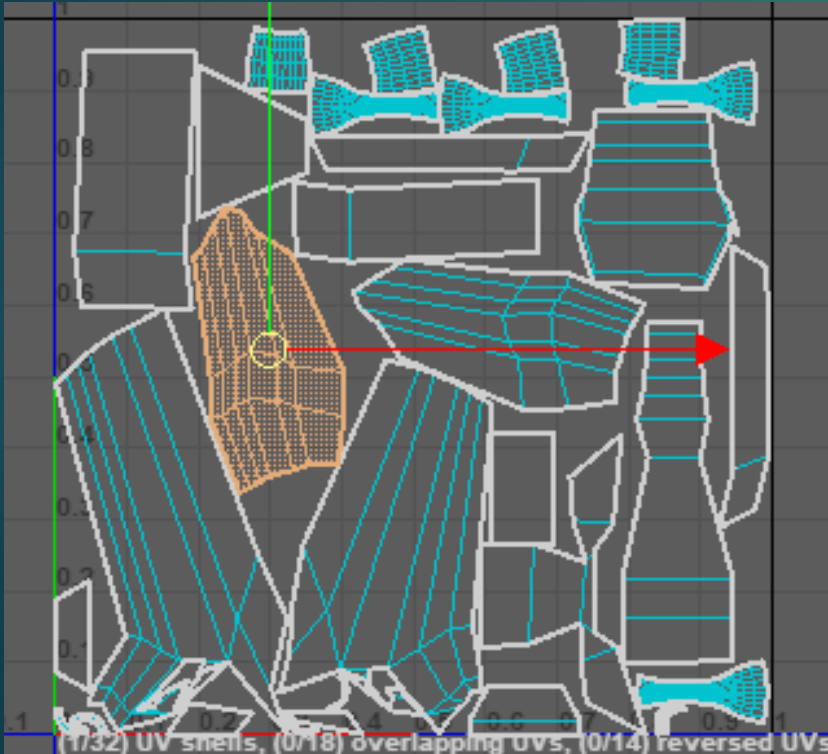
Since the acid was just a plane, I added an image as a texture for it without UV unwrapping anything



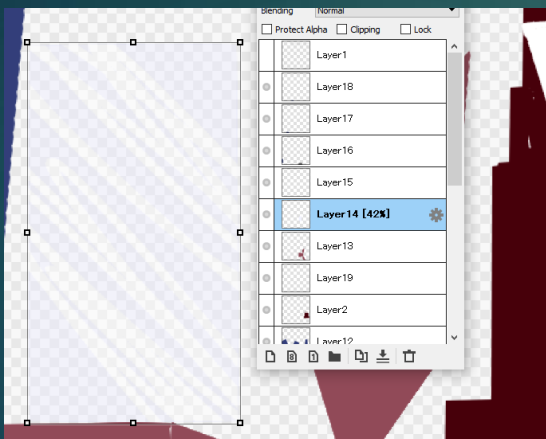
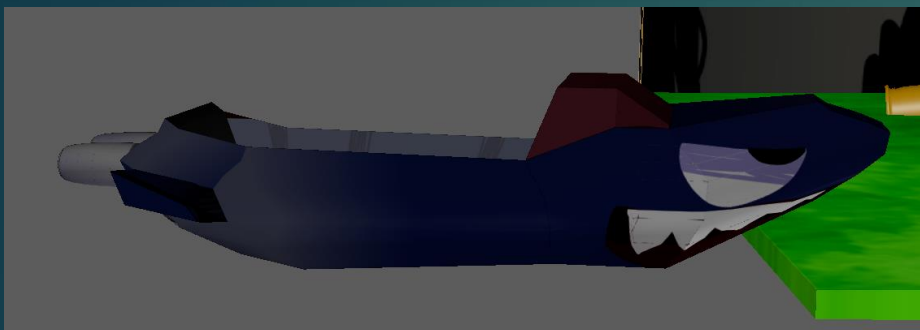
[8] Texture used for acid



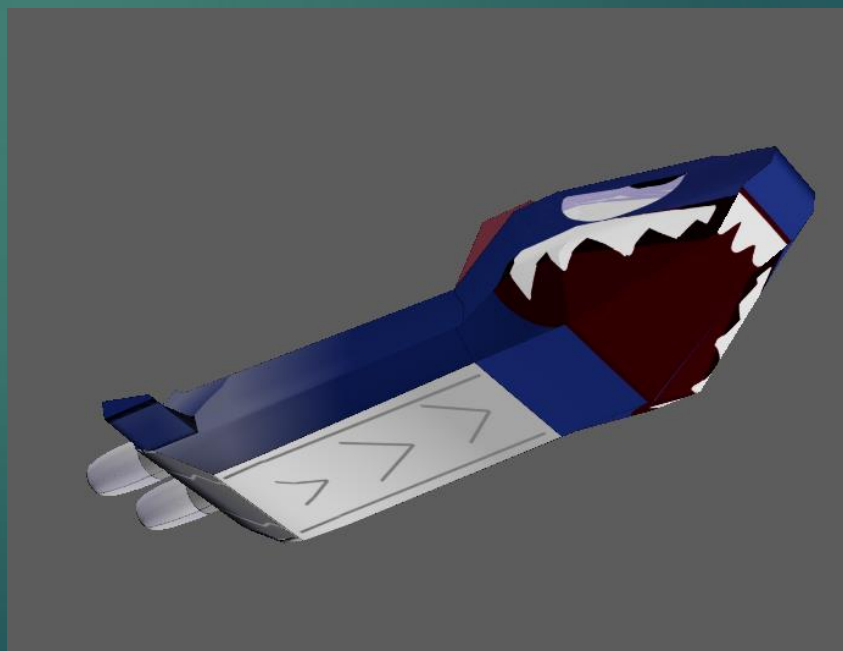
The boat took the longest time to UV unwrap due to the different shapes of the model and different parts which needed to be textured. The texture was loosely based off the TMNT boat this was shaped around, along with sharks in general and the Mario enemy known as "Banzai Bill."



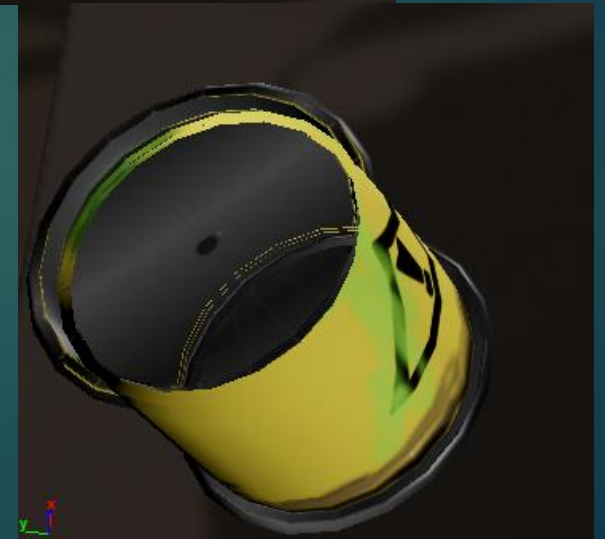
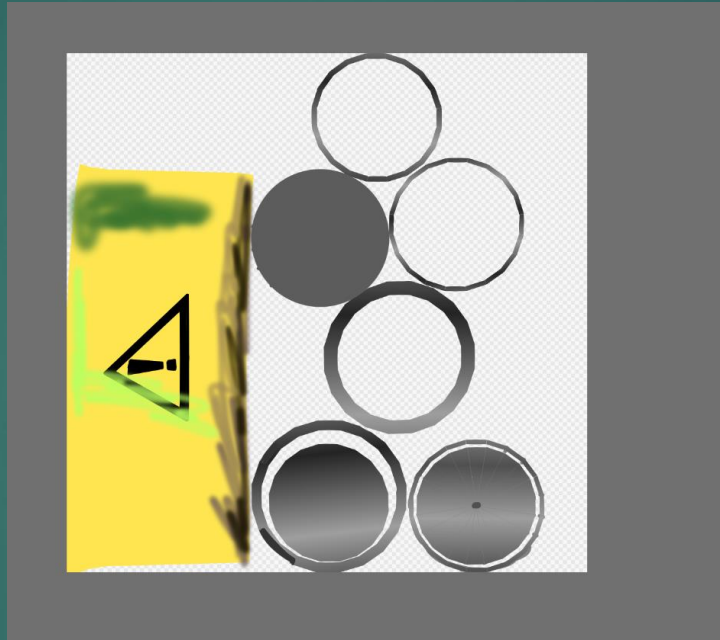
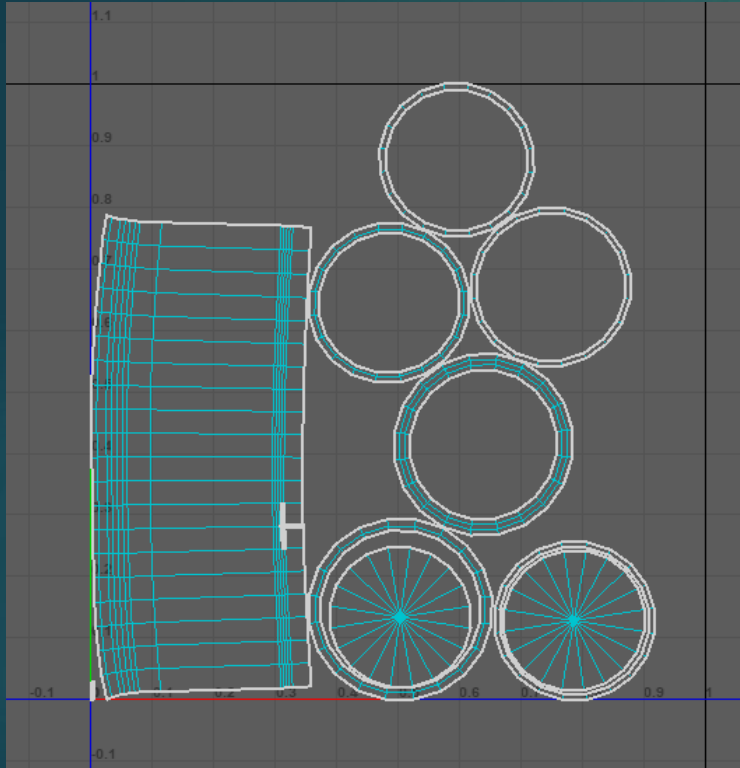
[9] Banzai Bill enemy



I tried to make the windows alone transparent by changing the transparency, however it didn't affect the model

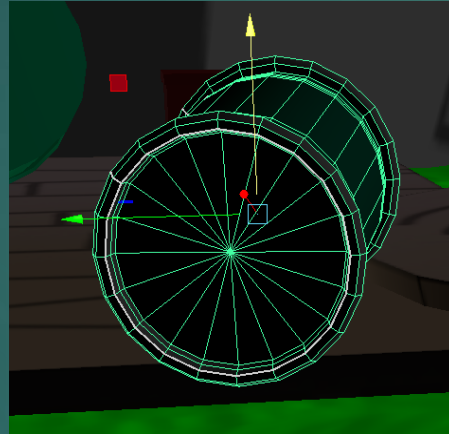
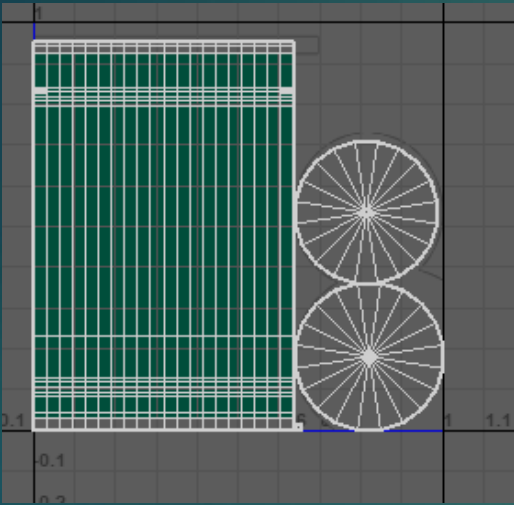


I had difficulties texturing the barrel as I tried cutting the rims, but this made the rim texture and the inside textures not show up.

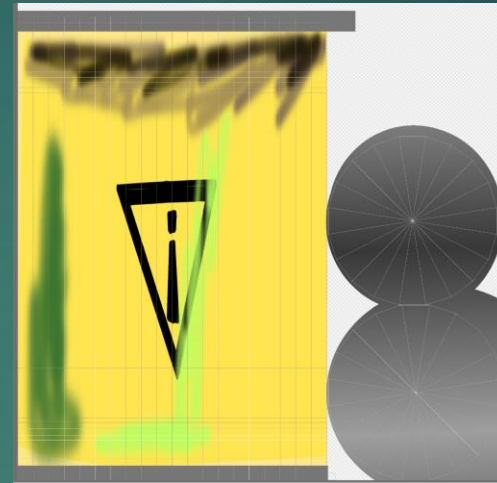


Barrel texture loosely based off this [10]

I tried again with the other barrel I made and that managed to work. Due to the barrel being open fitting with how it was in the toxic waste I swapped the barrels and their textures.



Testing to see if the UV worked



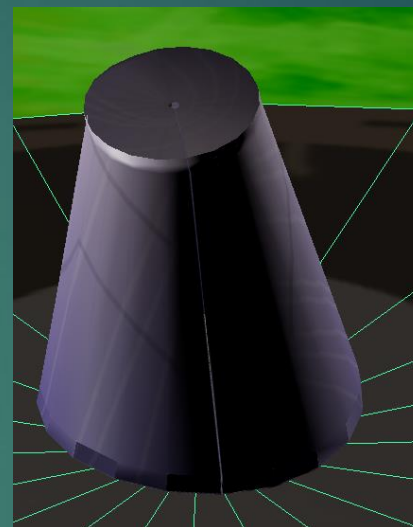
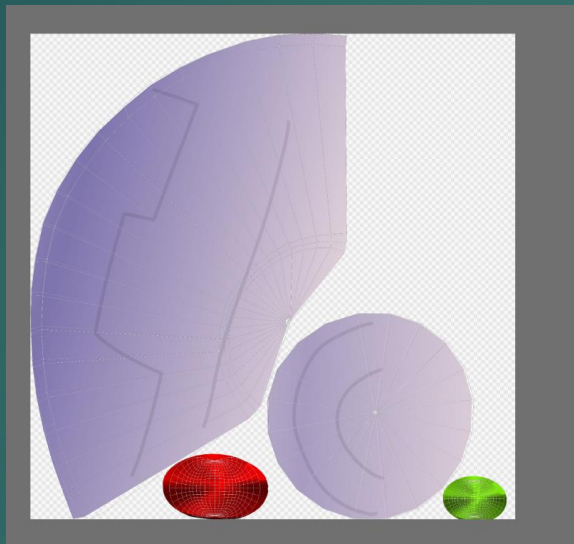
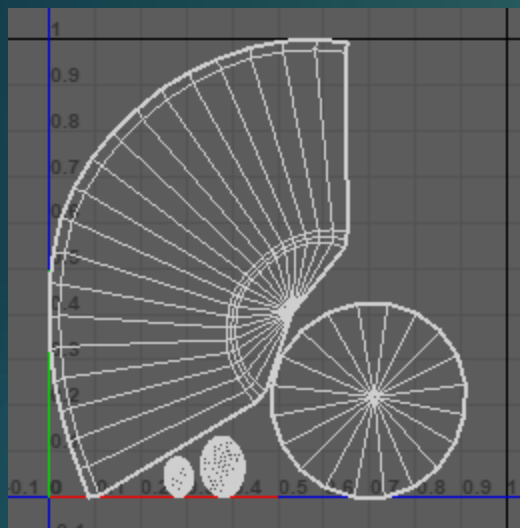
Updated textures and barrels



Barrel design loosely based on this [11]

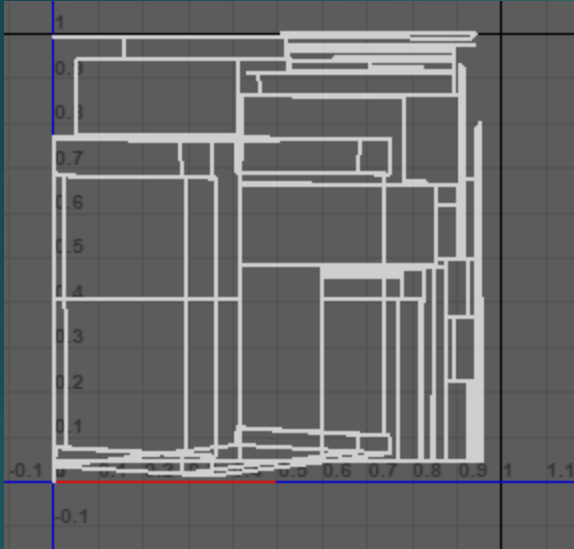


Texturing the button had a similar problem to the barrels where it wouldn't show the buttons, however they would briefly be seen depending on the angle. I feel the main issue comes down to the unwrapping of the spheres.

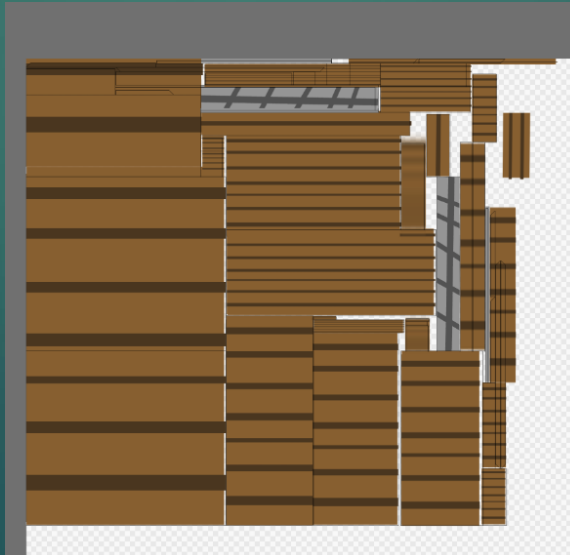
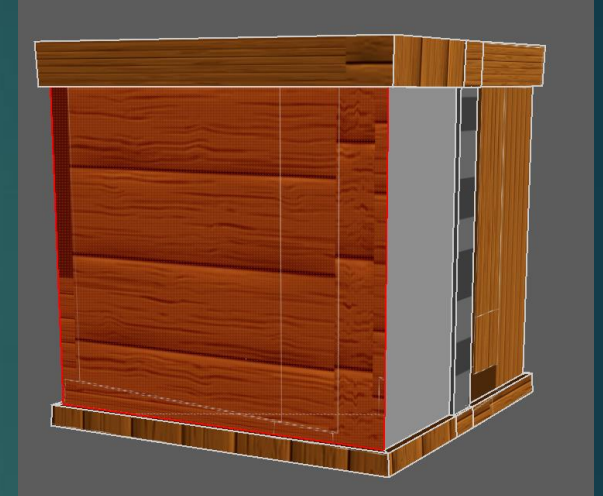


Button
texture taken
from this
image

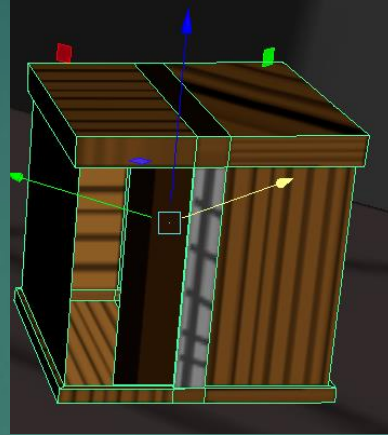
I had trouble trying to UV unwrap to the multiples faces and bits added by the extra extrusions.



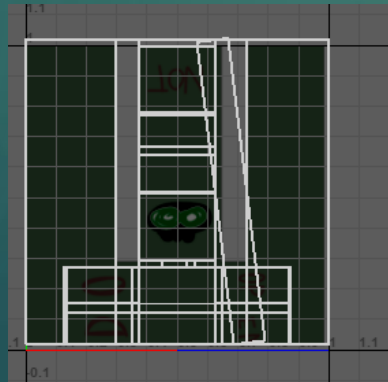
Texture used
was clipart
[13]



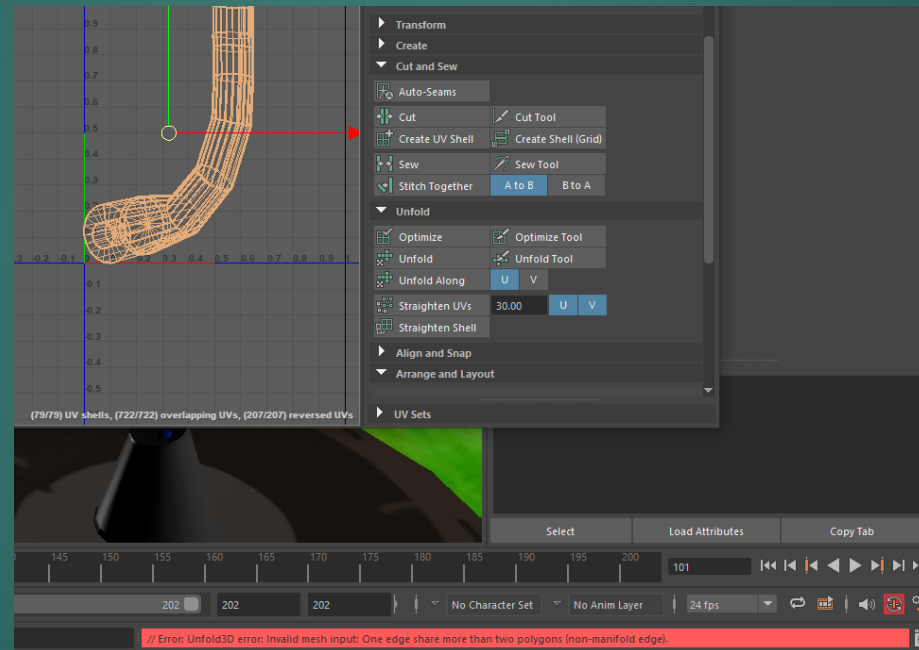
To compromise for the one of the faces not appearing, I used component mode to add a texture to it individual while extruding it inwards, making it look like the crate has been open.



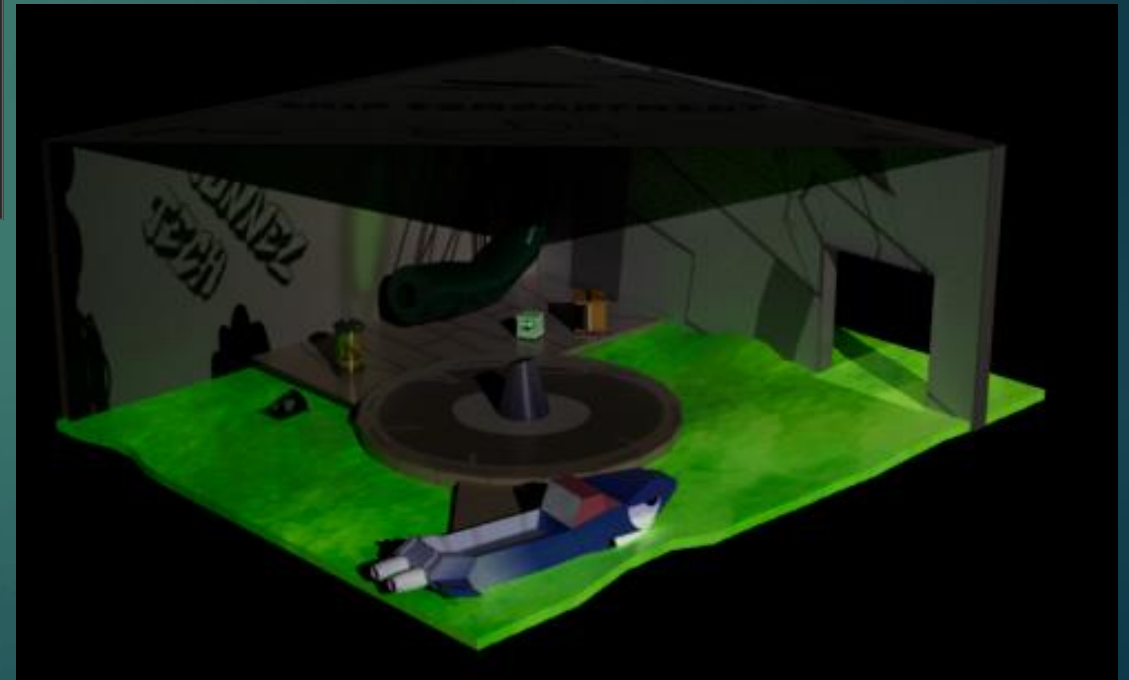
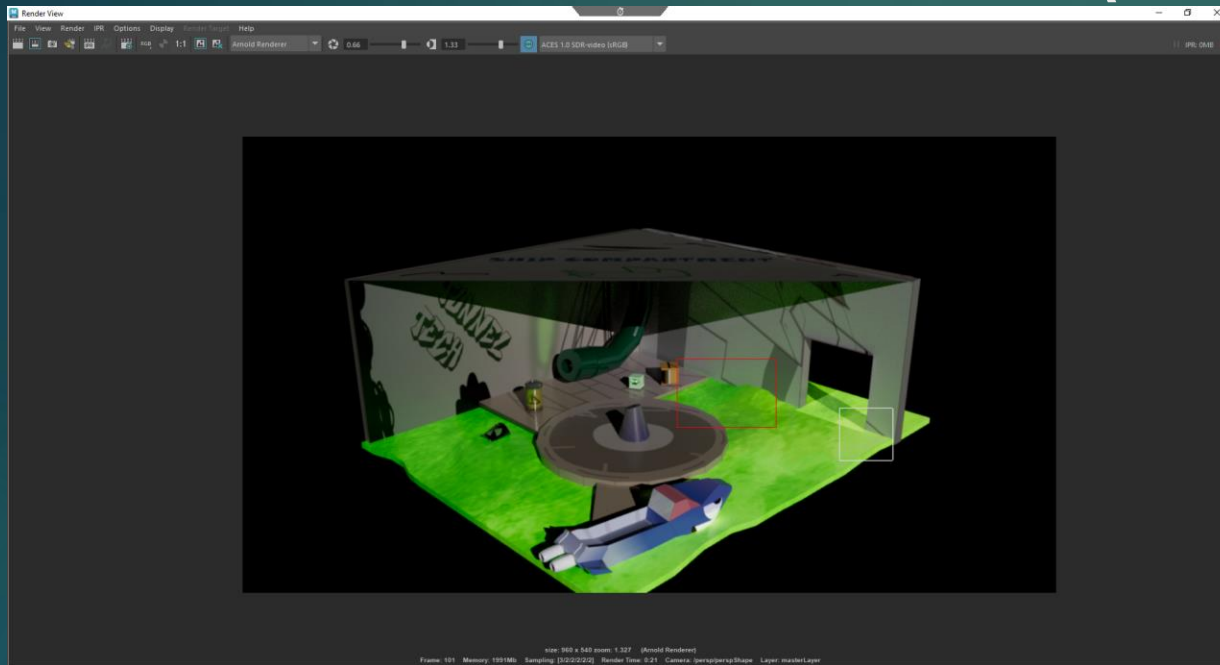
I went for a simpler idea for the second crate. This time I UV unwrapped it from it's default state and made the textures drawn on words and faces on each side.



I couldn't figure out how to UV unwrap the pipe as it wouldn't let me unfold it for having two faces, presumably after it was combined.



Rendered Diorama (from Maya)



References

- [1] upklyak, "Vector interior of empty underground car parking", freepik (Online) Accessed: 09/04/2023 Available: https://www.freepik.com/free-vector/vector-interior-empty-underground-car-parking_6993872.htm
- [2] penemenn, "Sewer 3", Deviantart. (April 7, 2011) (Online) Accessed: 09/04/2023 Available: <https://www.deviantart.com/penemenn/art/Sewer-3-203902954>
- [3] "Lego Batman 2: DC Super Heroes", ABC (July 7, 2012) (Online) Accessed: 09/04/2023 Accessed: 09/04/2023 Available: <https://www.abc.net.au/abcme/programs/ggsp/reviews/lego-batman-2-dc-super-heroes/10408354>
- [4] "Crate Costume", shop11230 (Online) Accessed: 14/04/2023 Available: <https://shop11230.mieldujura.com/content?c=crates+rust&id=2>
- [5] 3DW olf, "Maya Modeling Tutorial for Beginners | #4 - Oil Barrel Modeling in Maya 2022", Youtube (Sep 14, 2021), (Online) Accessed: 20/04/2023 Available: <https://www.youtube.com/watch?v=ufPhSIVpOug>
- [6] "Original Toyline Vehicles: Raph's Sewer Speedboat", Transformerland (Online) Accessed: 25/05/2023 Available: <https://www.transformerland.com/wiki/toy-info/teenage-mutant-ninja-turtles-tmnt-original-toyline-vehicles-raphaposs-sewer-speedboat/52138/>
- [7] Tolgrins Forge, "Sewer and Sluices" Roll20 (Online) Accessed: 06/05/2023 Available: <https://marketplace.roll20.net/browse/set/8151/sewers-and-sluices>
- [8] 123rf. "Watercolor background. Handmade texture. Bright acid green color. Vector illustration", tasmeem Me (9th May 2023)(Online) Accessed: 09/05/2023 Available: <https://www.tasmeemme.com/en/store-items/watercolor-background-handmade-texture-bright-acid-green-color-vector-illustration/?item=1043848547>
- [9] "How to draw Banzai Bill from Super Mario games", Sketchok easy drawing guides (Online) Accessed: 09/05/2023 Available: <https://sketchok.com/game-characters/super-mario/how-to-draw-banzai-bill-from-super-mario-games/>
- [10] Dotted Yeti, "radioactive waste in barrels, isolated on white background (3d rendering)", shutterstock (Online) Accessed: 09/05/2023 Available: <https://www.shutterstock.com/image-illustration/radioactive-waste-barrels-isolated-on-white-1943117155>
- [11] valterz, "Barrel of toxic waste. Radioactive waste vector illustration isolated on white background", alamy (29 March 2018)(Online) Accessed: 09/05/2023 Available: <https://www.alamy.com/barrel-of-toxic-waste-radioactive-waste-vector-illustration-isolated-on-white-background-image220371745.html?imageid=58FC4D3F-7D6F-4C5B-94CE-13DF27161AF9&p=738240&pn=1&searchId=71ec36396d90e11a9fd4e376995f6bce&searchtype=0>
- [12] molaruso, "Red Circle Badge With Metal Polished Texture stock illustration" iStock by Getty Images (March 26, 2019) Accessed: 09/05/2023 Available: <https://www.istockphoto.com/vector/red-circle-badge-with-metal-polished-texture-gm1138422253-303922906>
- [13] ludmila_m, "Wood texture, brown plank. Wooden background in cartoon style. Vector illustration", Abode Stock (Online) Accessed: 10/05/2023 Available: https://stock.adobe.com/uk/search?k=cartoon+wood+texture&asset_id=257717689

Bibliography

1. Josh Antonio, "Maya's Make Hole Tool", YouTube (October 4, 2021) (Online) Accessed: 11/04/2023 Available: <https://www.youtube.com/watch?v=Xj-GBHjQ-1c>
2. Academic Phoenix Plus, "Booleans", YouTube (October 26th 2022) Accessed: 11/04/2023 Available: <https://www.youtube.com/watch?v=R8MJQ5Vrxpk>
3. CGfor.me "0001 Maya Modeling a basic boat", YouTube (May 10, 2011) (Online) Accessed: 21/05/2023 Available: https://www.youtube.com/watch?v=4XknV_B9bno
4. 3dEx "Autodesk Maya 2020 - How to Make a Simple Stylized Boat _ Feat_Pietro Chiov aro", YouTube (February 20, 2020) (Online) Accessed: 21/04/2023 Available: <https://www.youtube.com/watch?v=0TcfW75AmTU>
5. Sang Sang "unwrapping a barrel UV in Maya", YouTube (May 2, 2020) (Online) Accessed: 09/05/2023 Available: <https://www.youtube.com/watch?v=wM8PiwpVCu0>
6. Digital Dreambox, "Model A Low Poly Barrel In Maya | Part 2 UV Unwrapping", YouTube (June 3, 2021) (Online) Accessed: 09/05/2023 Available: <https://www.youtube.com/watch?v=XMGhwlKKsII>
7. Academic Pheonix Plus, "Basic UV Mapping in Maya: Crate", YouTube (February 25, 2015) (Online) Accessed: 10/05/2023 Available: <https://www.youtube.com/watch?v=dNDwz7evgZ8>
8. Jinghua Ge. "Render the Scene : Basics", (April 11, 2016) (Online) Accessed: 10/05/2023 Available: http://avsl.cct.lsu.edu/maya_render_basics.html#:~:text=From%20the%20main%20Maya%20window,%3A%20File%2D%3ESave%20Image