Radio Hall

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ITGM 721 Environment for Games

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Contents

Inspiration: Radios

Radio Hall was conceived during a brainstorming session. I considered where my character Garret the grasshopper would live. Garret plays the violin, so I thought an old broken radio that still somehow played music (Garret Fiddling) would be interesting. Staying within the period of the 1930s radios I found many references, this one pictured here was my main inspiration (top right). I considered keeping the inside of the radio like they really look (see below), but it severely limited how I could modify the interior. I decided to opt for the gutted shell of a radio. I pictured the hall to be part make shift stage for ho-downs and part loft.

This assignment was the first of three full environments that were built during the 10 week quarter. I hadn't played in Unreal since my undergraduate days 7 years earlier so it was good to learn a commercial engine again; help from the community is priceless.

Research and Reference: Nostalgic

When I was in third grade a TV series came out called "the Little's". The Little's was based off of a book written by author John Peterson. While I had never had the pleasure of reading the book, I watched the show a lot. I used to pretend the Little's lived in my heaters; it was a way of coping with the noise the heaters made which scared me. I tried to go back to that playful frame of mind and imagine what it would be like to makeshift an environment for an 8 inch anthropomorphic grasshopper. Taking cues from the environment around me and from popular nostalgic items like bottle caps, trading cards, thimbles and spools of thread I tried to devise a space that had the same amenities as ours, just creatively combined from smaller items.

Research and Reference: Stage

I research concert halls and stages. I played particularly close attention to the curtains, because I believed cloth like that could be manipulated by a smaller creature to create a stage.

A can of ham became the idea I would go with for the stage support. There of course is an implied joke present. The rest of the stage would be compiled of cardboard boxes and sardine cans. To get cardboard textures I simply scanned them from real boxes.

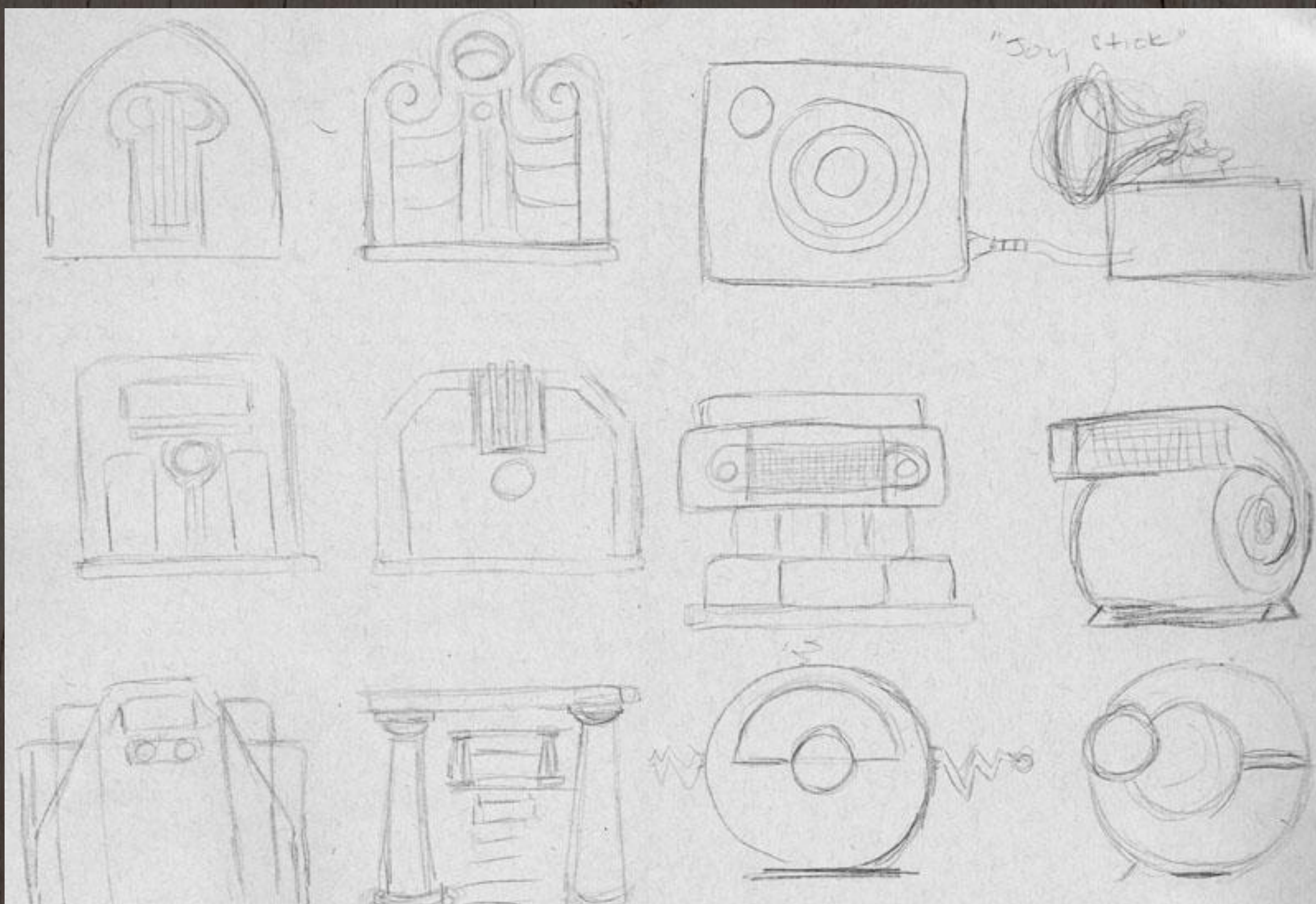
Research and Reference: Barn & Lights

Lighting was an important step in the research process, as lighting would set the mood of the hall. I looked through references on the web of old barns, I thought that would be a good starting point for the lights. Old barns usually let a little light in through cracks in the wood slats much like the screen on the old radios might let in. I then added Christmas lights to the occasion. I thought a strand of lights could add lighting that would fit within the genre of small and accessible. Here are some of the inspirations I found on the web:

I originally planned on having a Christmas ornament disco ball and I was able to model it, but I did not get it implemented into the level to my standards due to time constraints. I did however get the flashlight created that was to light up the disco ball, which now serves as the stage light.

Thumbnails 1

At one point I went into a concept phase of radio shapes. I wanted to explore more than just the traditional radios I found on the web. I let myself progressively deviate from earlier designs. I would say I went from the 1930s to today and perhaps beyond.

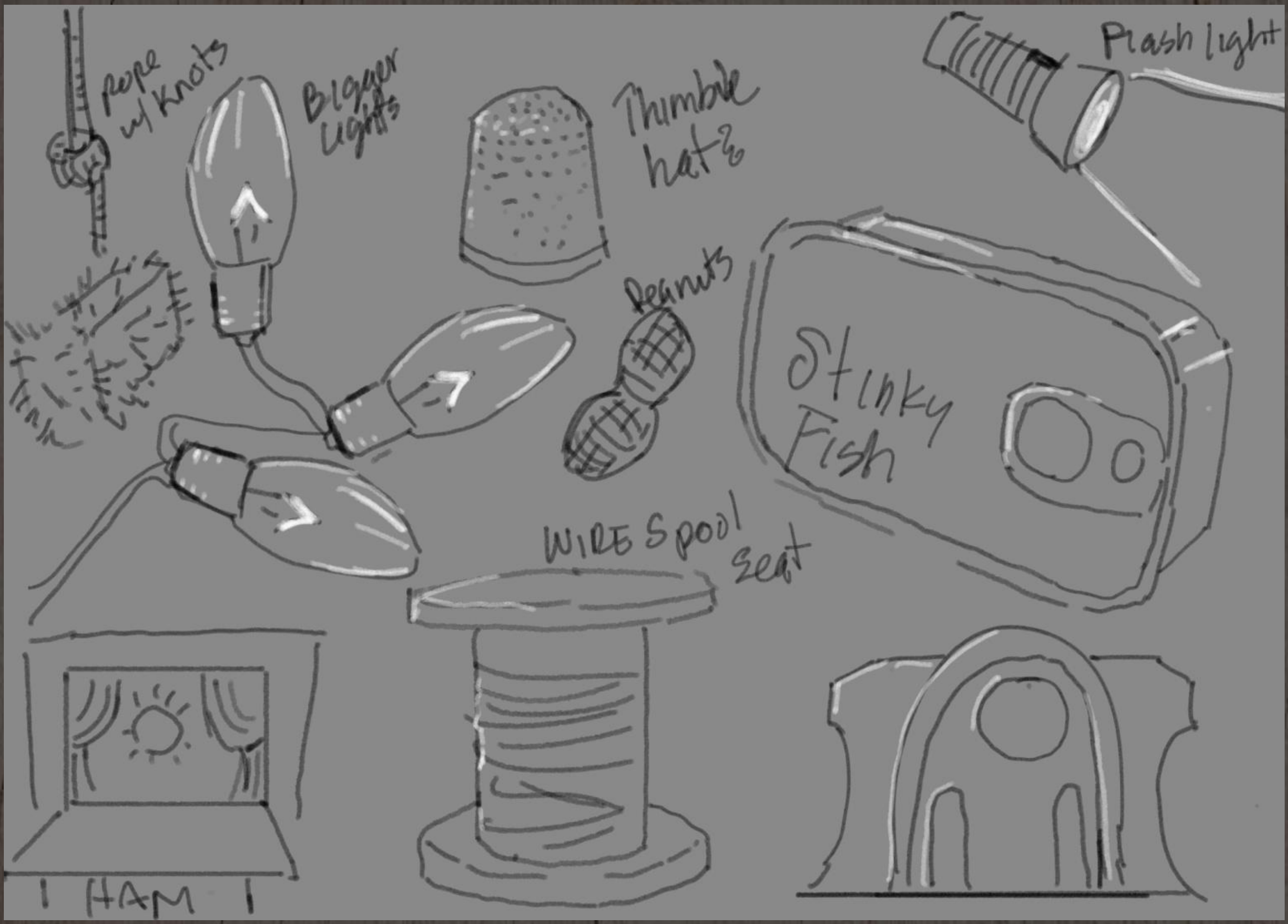


Thumbnails 2

These thumbs were intended to flesh out Ideas I had about items I could use. I wanted to get a little music windup instrument into the environment, but unfortunately I ran out of time and had to cut it.

Thumbnails 3

More items that were being visually pondered. I decided to go with the smaller bulb types, but I felt the larger ones were more period.



Thumbnails 4

This group had many items that made it to the final piece. I contemplated doll house pieces, but I think that would be an easy solution rather than a creative solution of makeshift pieces.

Thumbnails 5

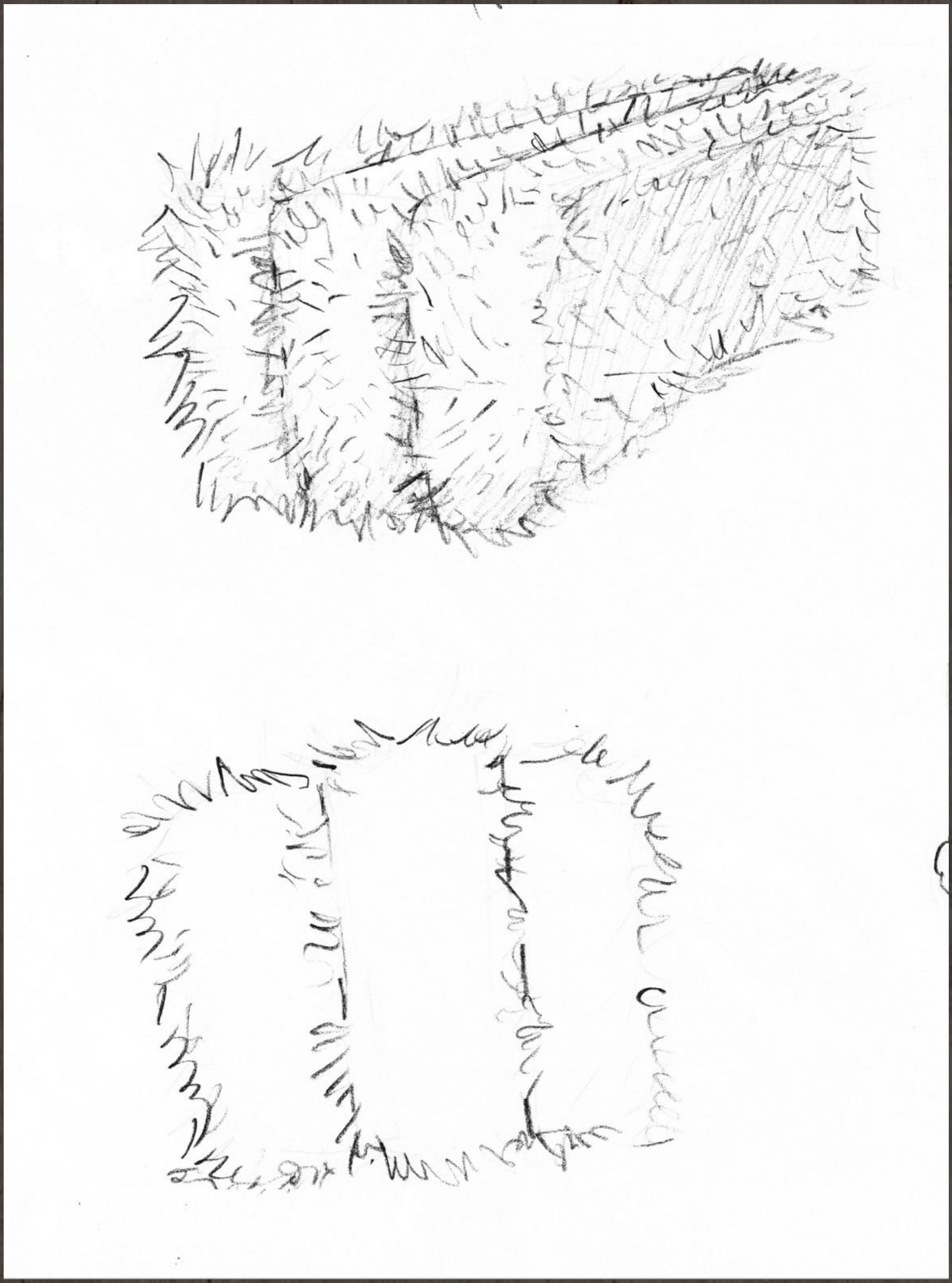
For the class requirements we needed to have a concept of the whole environment layout.

Roughs: Sack-o-Peanuts

When creating a 3D model I try to have a clear and concise direction to travel towards. I find that sketching out a front and side orthographic view of the object I wish to create helps me not only to step through the process with confidence, but contemplate the process.

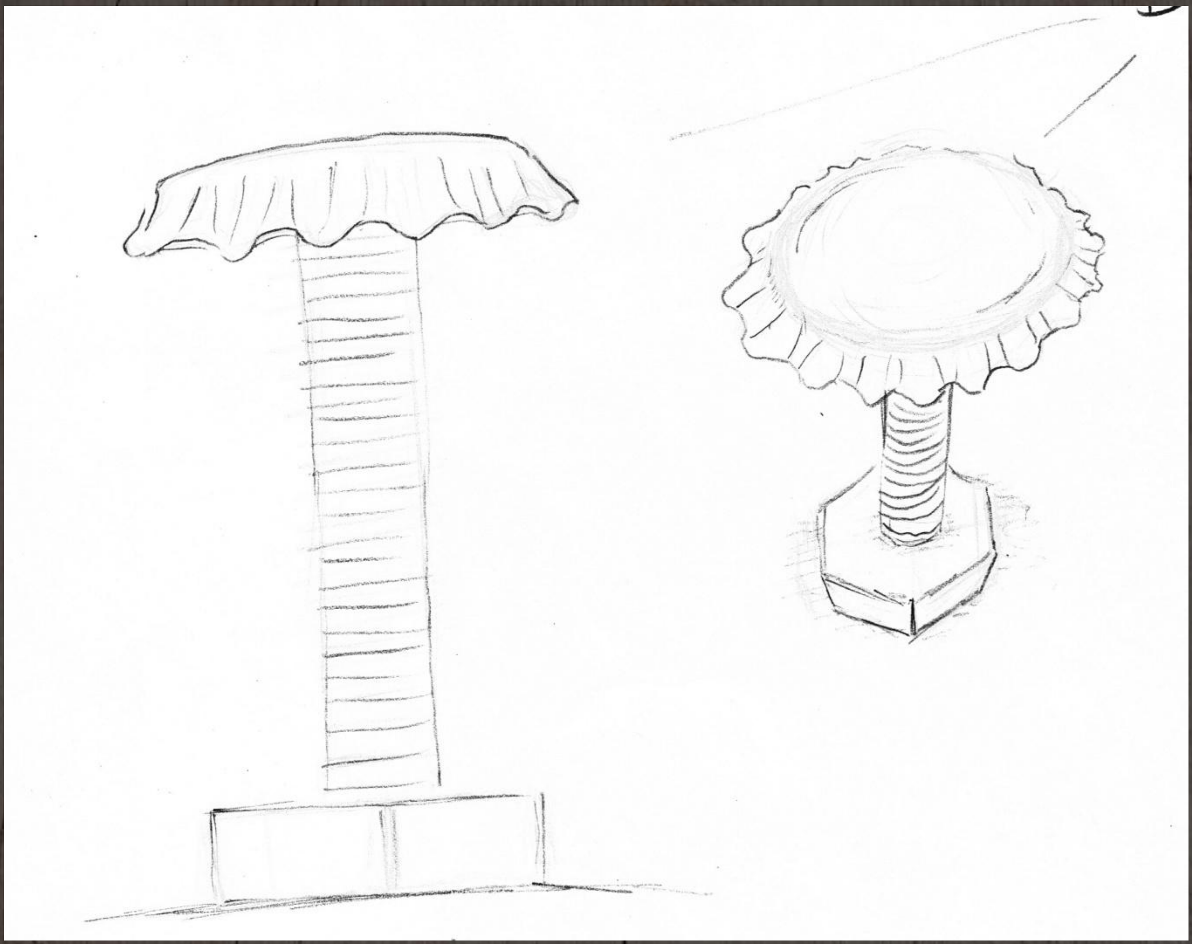
Roughs: Bale of Hay

I wanted to keep to objects that really exist, or really could exist. I saw little bales of hay for gerbils in the pet store and I thought they would make good little benches to place around the stage.



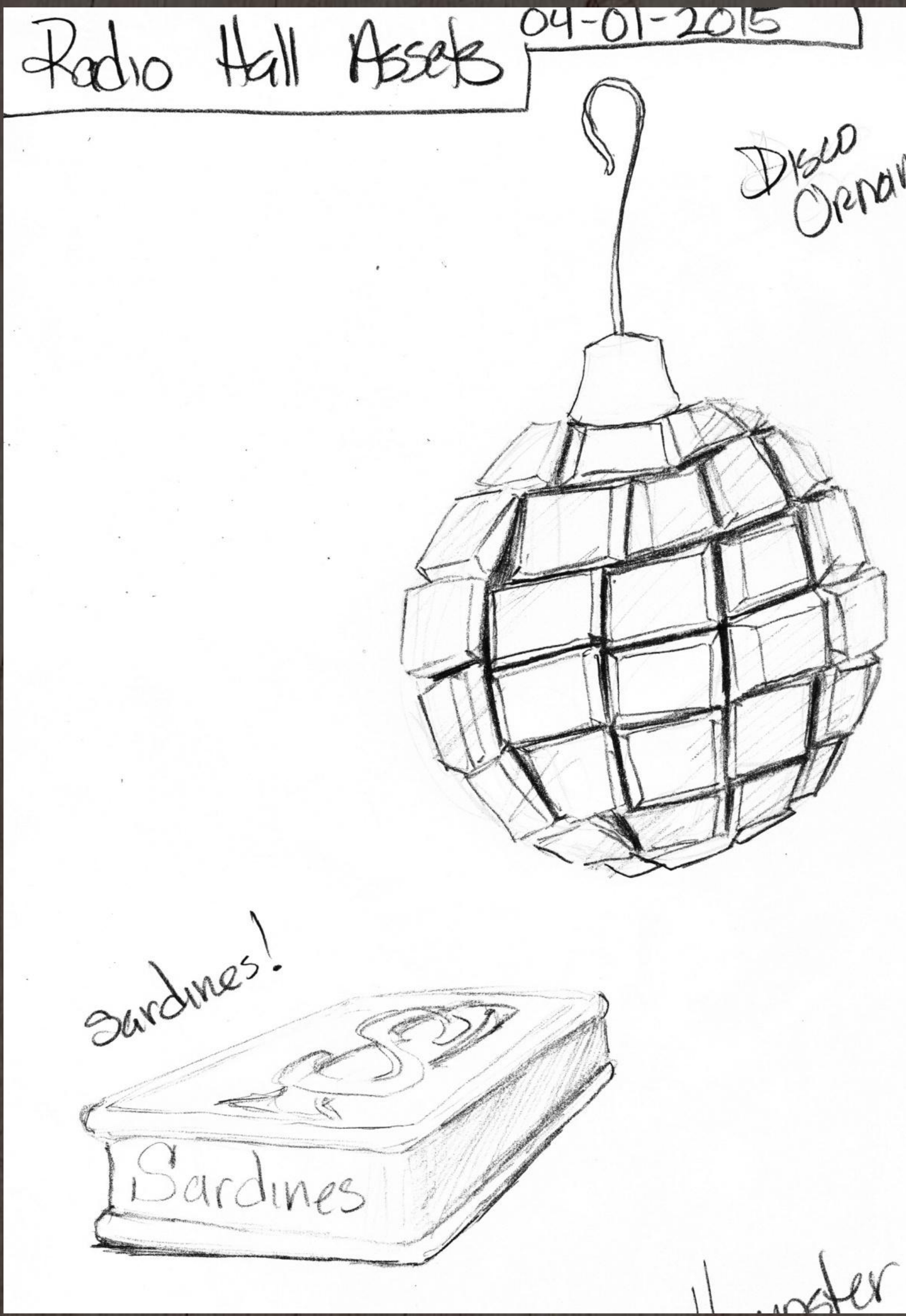
Roughs: Makeshift Stool

This was the solution for a bar stool. How do these items stick together? Bubble gum.



Roughs: Sardines & Ornaments

Sardines remind me of an old type of food, so I thought it appropriate to include it in the hall as a structure piece. The ornament was a fun piece that was supposed to add light to the room.



Roughs: Exterior

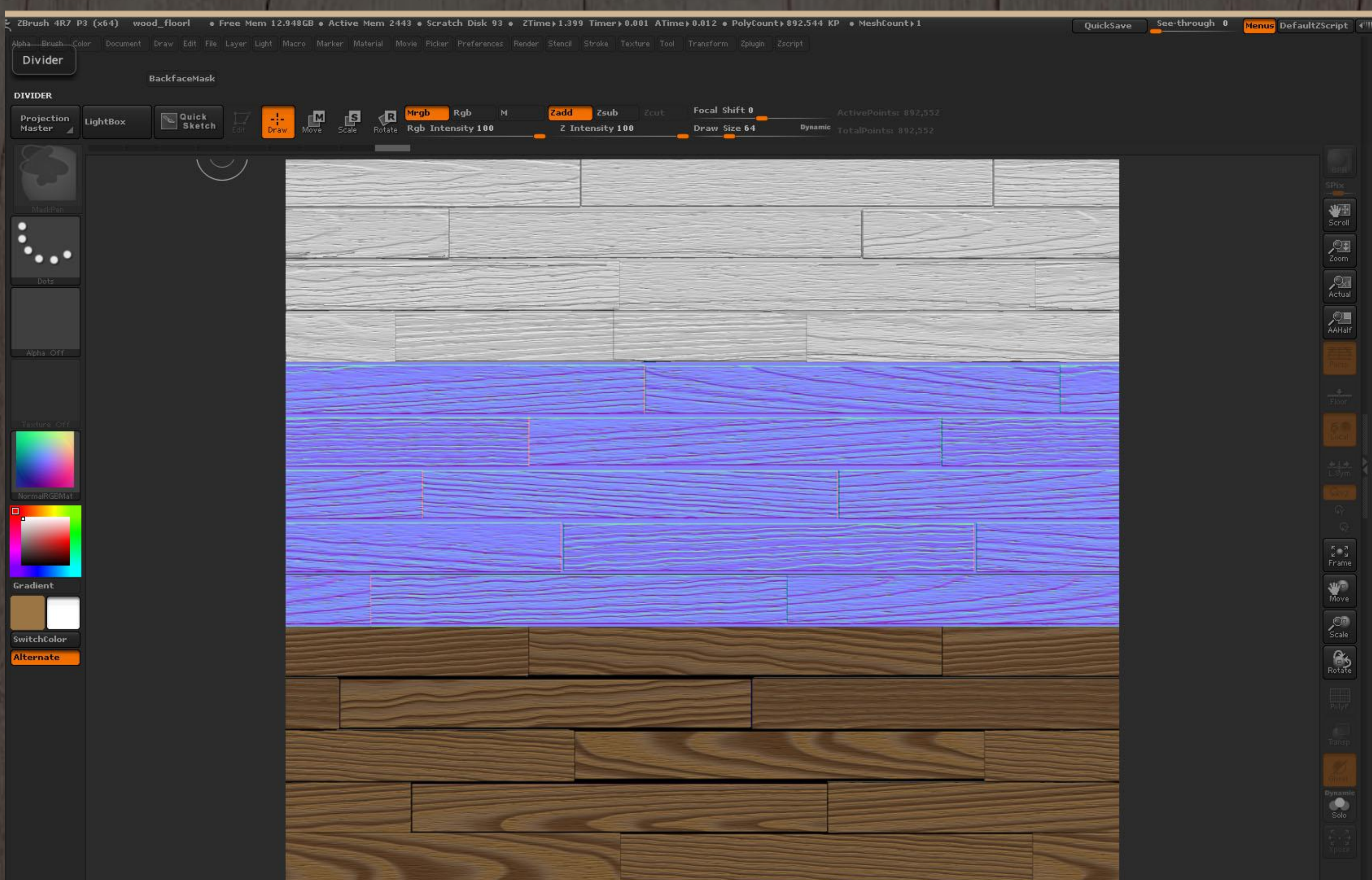
The exterior reflect the original radio reference, I chose to simplify the shape due to time constraints.

Computer Roughs: Layout Changes

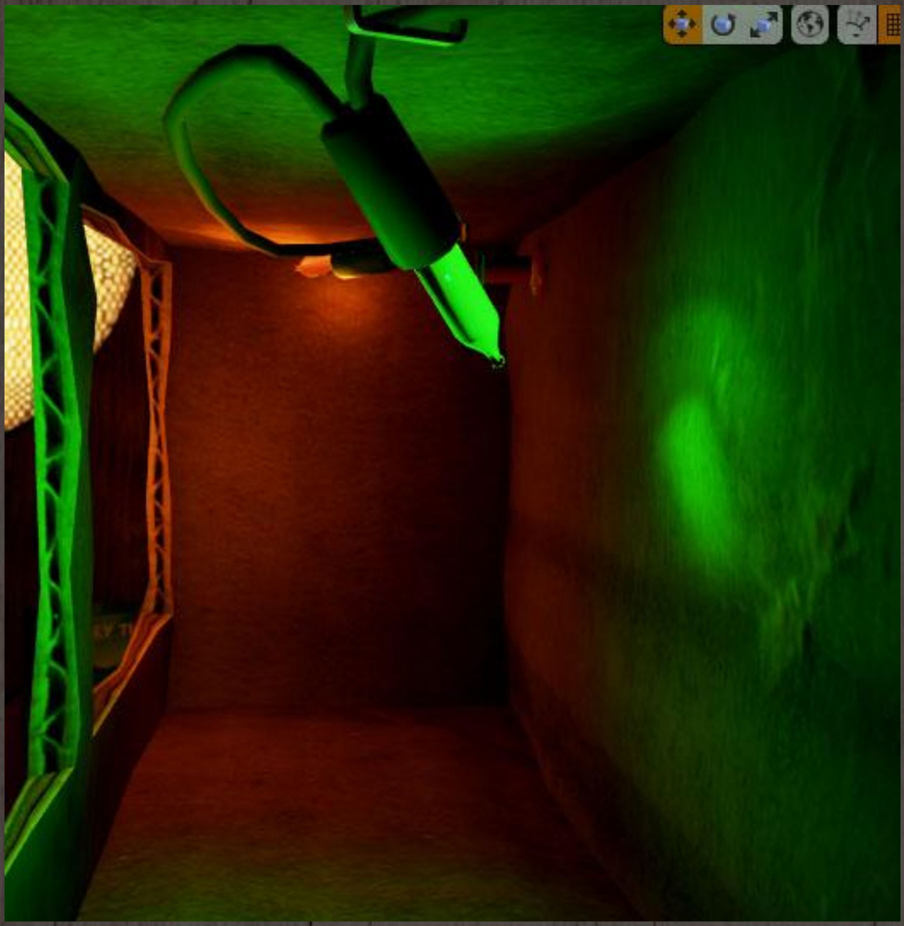
Below is an look at the front and back layout and dimensions of the original space that was blocked out. Many items changed as time went on, pieces were added and some subtracted. The ornament disco ball and the stairs were cut, and the items to the front wall by the stage were swapped left to right in order to accommodate a door/flap that was added to the stage box.

Computer Roughs: Advanced Textures

Below is a screen shot from Zbrush that shows off a technique I use to get great textures. I create 3D planks and use a combination of two surface noises: 1) wood 2) stretched dents. Then I color the planks the wood color using masks the wood noise makes. Each plank yields 2 sides, so I make enough planks to fill a square area, and use the tilde key to tile the canvas. There is much more to the technique, but that is the gist of it. What is seen below is three different materials I put on the tiled "pixols". Zbrush pixols are like pixels but they carry an extra depth channel that allows Zbrush's canvas to read it like a bump map. That bump map allows normal materials, cavity materials, framer materials etc. to be applied and saved out. Below is all the same texture, but I painted three different materials on the surface to show the power of the using pixols.



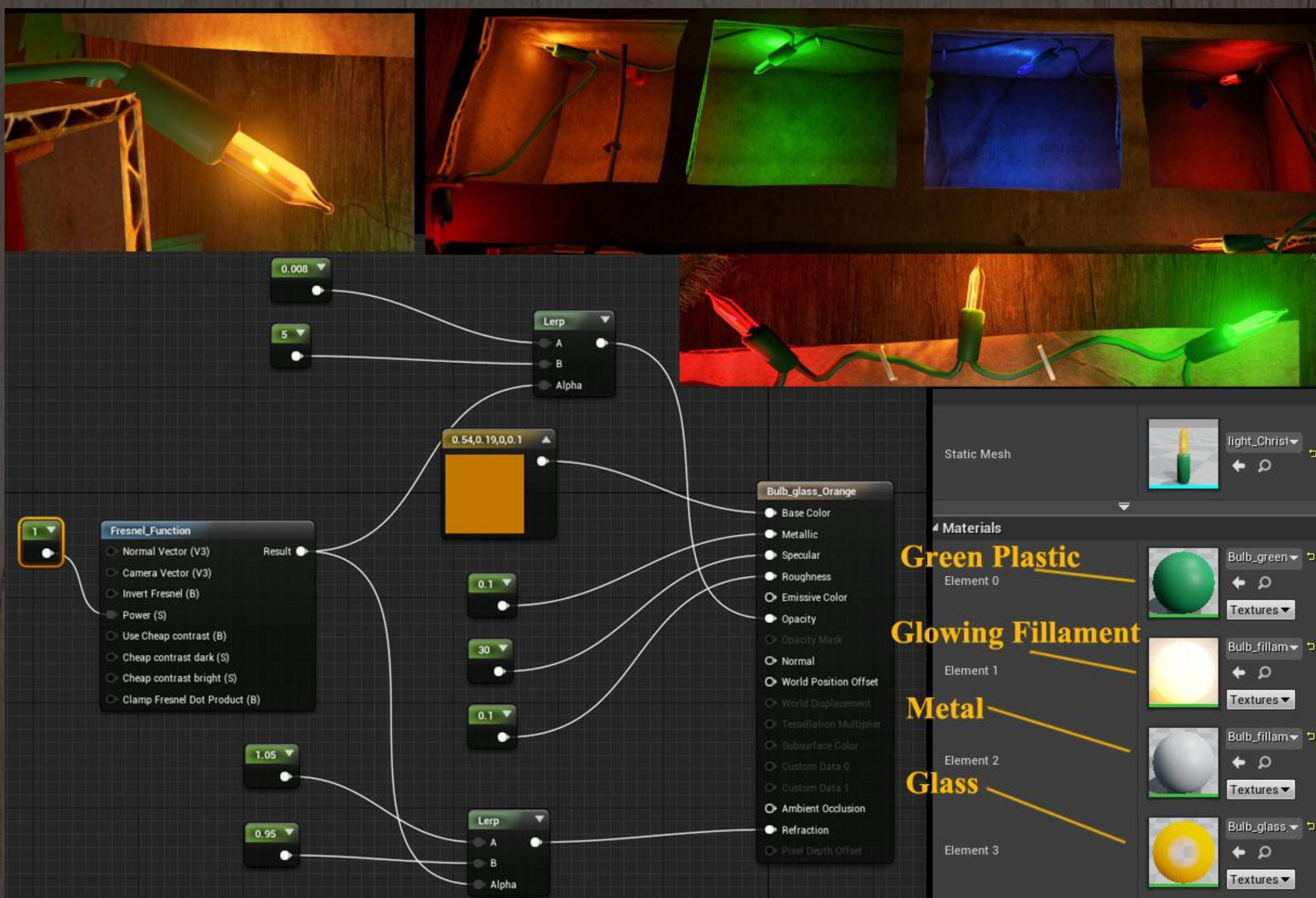
Computer Roughs: Lighting IES



Lights from light bulbs generally have throw patterns to them that create interesting shapes on the surfaces around them. In older versions of Unreal one would have to fake this with a gobo, but now in the newer Unreal 4 you can actually use an IES file right in the engine! If you look closely at the green light on the wall to the right you can see an IES pattern.

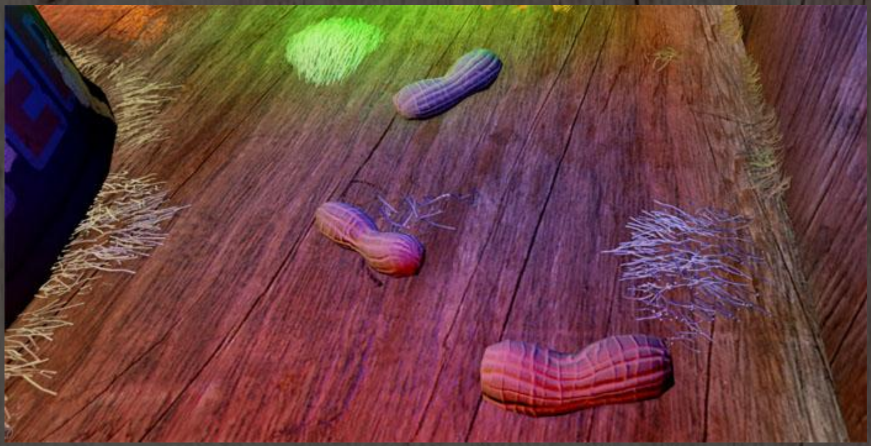
Computer Roughs: Bulb Materials

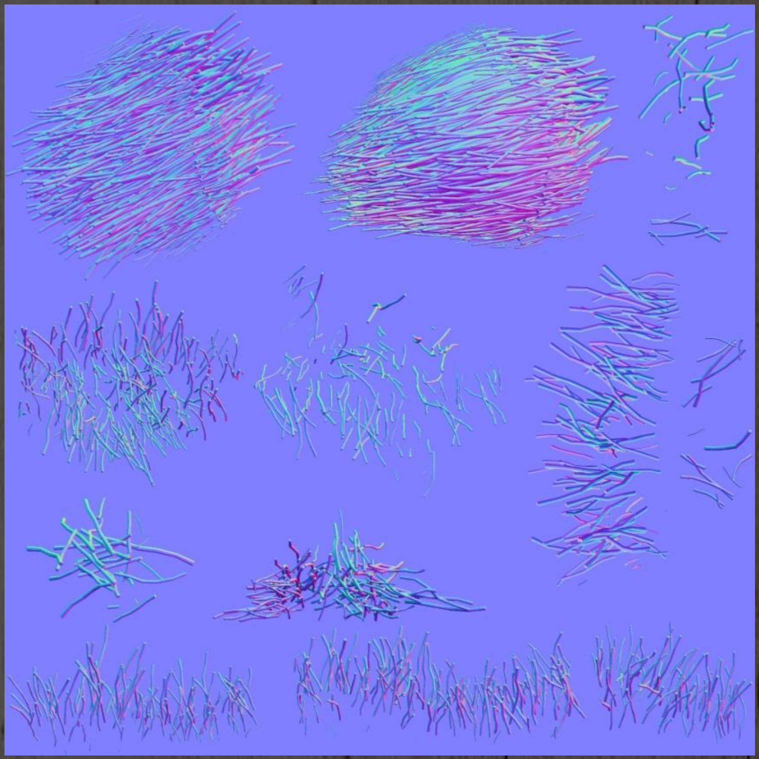
Although one of the smallest object of the scene, the lights are the most complex in the category of materials. below you can see the material network that is causing the real time refractions. At the bottom right you will notice that the bulb is made up of the four materials listed.



Computer Roughs: Hay

In the past creating good normal maps for photo source textures was challenging because normal map filters like NVidia's just looked at the value of the texture to calculate the fake normals. Sometimes normals from source textures looked alright, but many times the artist would need to hand paint maps to get the right bump. But if one uses meshes to generate normals the results are accurate to the surface of the mesh. In Radio Hall the hay was made using fiber mesh and rendered onto 2D maps.



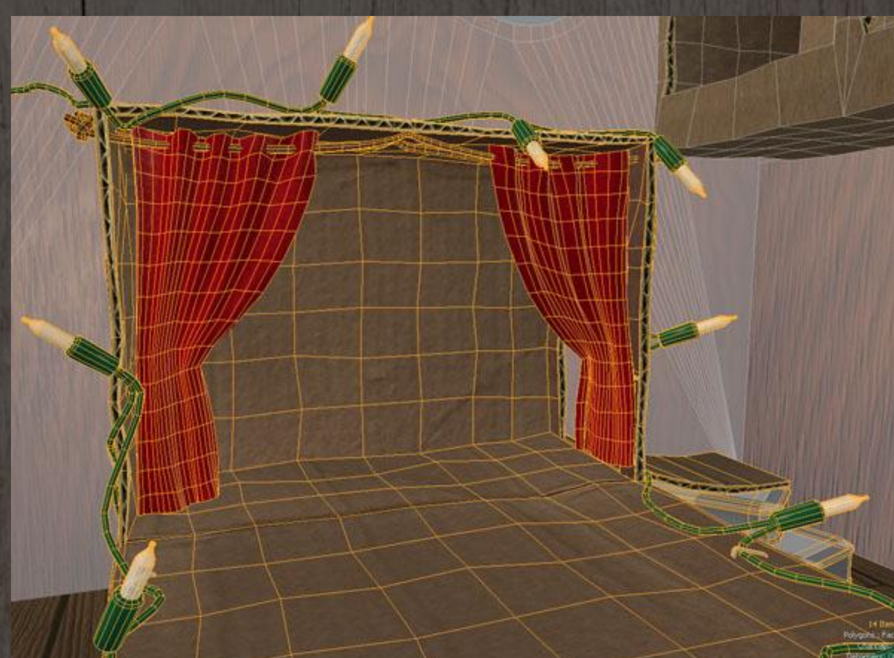


Analysis: Early Block out

This is a very early block out stage of Radio Hall. Originally I had incorporated a spiral staircase into the area for navigating to the balcony on the second level. I decided to get away from the stair case for two reasons: 1) It took up too much room 2) It did not fit into the makeshift world. In the end I went with twine with knots, like the rope from gym class (bottom).

Analysis: Curtains

This is a closer look at the finished curtain sculpt. The curtain was done using NCloth in Maya, and then tweaked in Zbrush. Originally the curtain was all the way closed, but I felt it was too formal, and needed a laid back feel to it. I decided to get rid of the closed curtains and just keep the side ones (bottom).

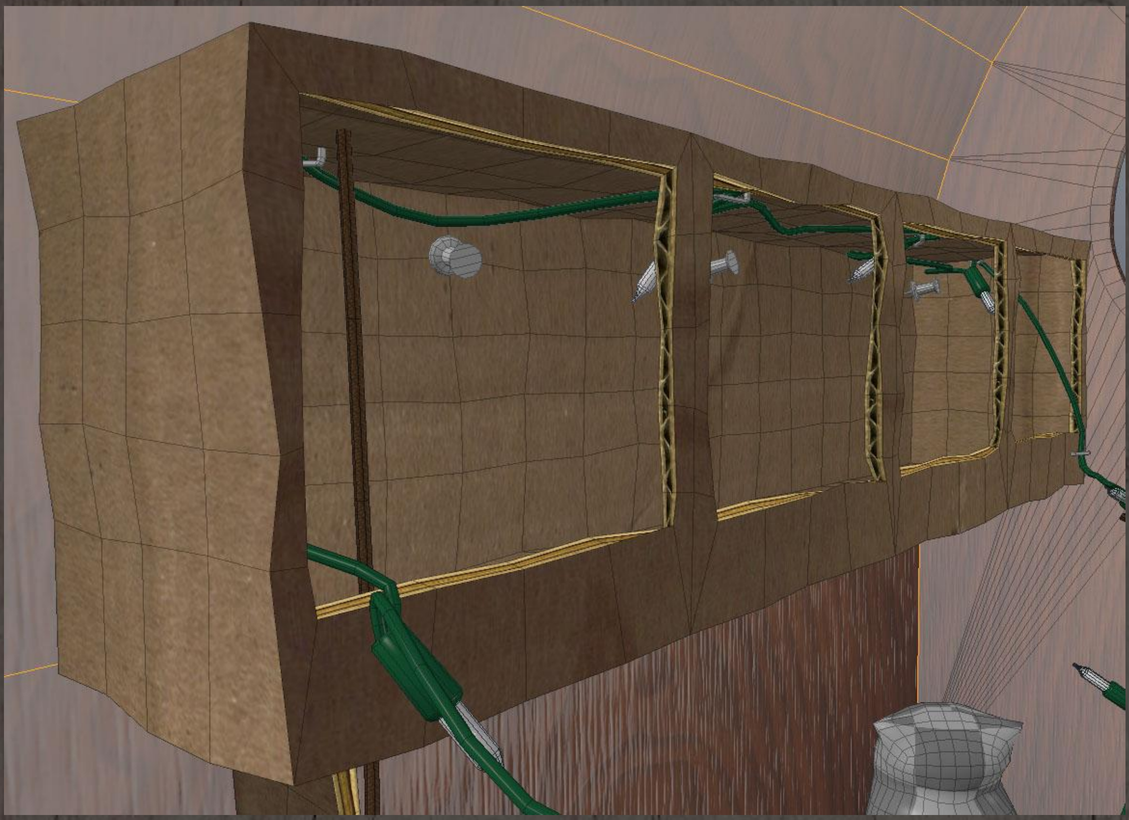


Analysis: Texture Considerations

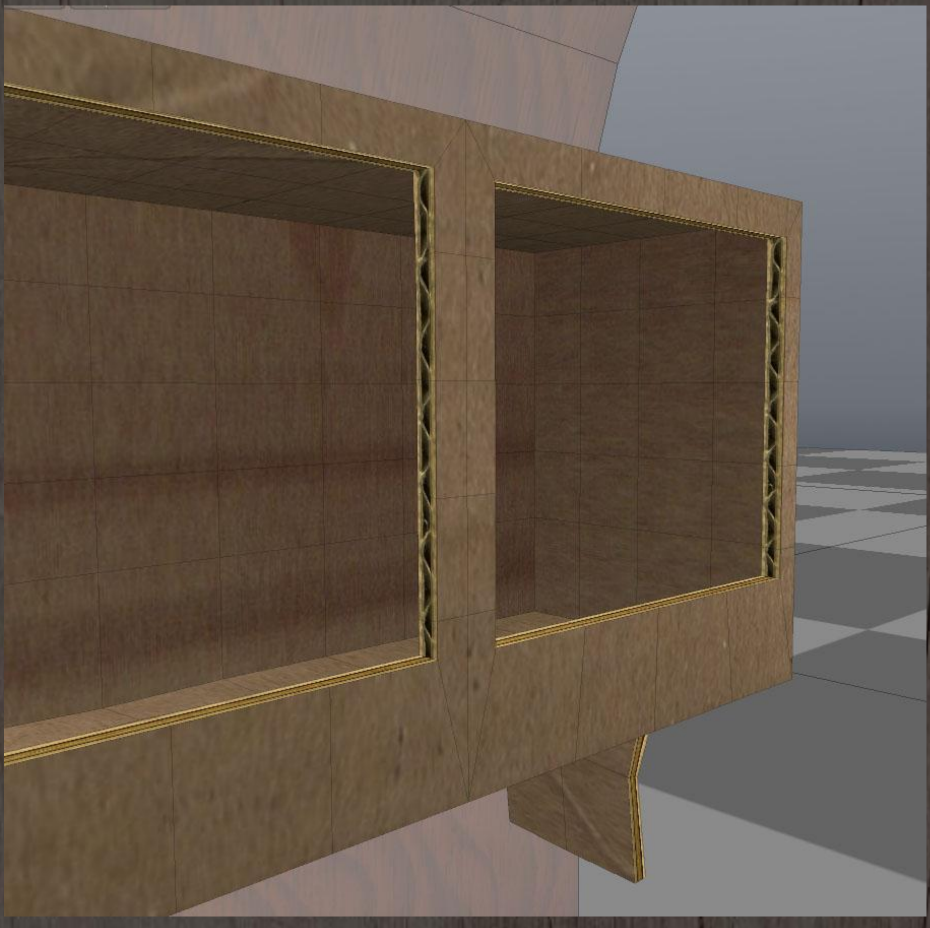
I went through a lot of effort to create the texture of the wood floor (below left), but after applying it to the floor I had second thoughts. It felt too fabricated for the makeshift environment I was creating. In the end I decided to go with the rough wood (below right).

Analysis: Adding History

This is a look at the balcony section of Radio Hall. I subdivided the boxes



and put a noise on them to give a natural used feel (left). In the bottom picture is the box before the noise is applied, I felt it looked to sterile and too perfect this way.



Analysis: Chalk on cardboard

In my first variation of the cardboard stage I only had plain cardboard. After looking at the screen for a bit, I decided the blank cardboard needed a mural. I wanted the mural to look like chalk. I used Corel Painter to achieve the look I wanted because Painter handles surface texture and natural medium looks exceptionally well.

Final Renders: Unreal 4

Final Renders: Details

Final Renders: Top & Bottom