Prof. Dr. Mathias Lux:

Introduction to Computer Graphics [780.214]

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Final Project in blender:

Work Report

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For this project, I decided to model, and shade a scene consisting of the corner of a room and basic furniture for a bedroom. I worked the first time in any 3D software which is why I sticked to exploring the basic functions. To understand how blender can be utilized, I followed several tutorials (including some of *Blender Guru's* beginner playlist) before and while I was working on this project. The only imported things are four screenshots I took while playing a game, *Genshin Impact* (miHoYo, 2020).

What I presumed the easiest task was modelling the room. However, I had forgotten about leaving the quads intact as shown in the blender workshop – because only after starting to model the windows I started using the snapping feature and grabbed edges instead of a single vertex to change the shapes of the meshes. I noticed the inconsistency of the walls at the end and tried correcting them, but I think there are still mistakes.

Next, I started modelling the windows as I wanted to create an interesting light and shadow contrast throughout the room. It took several tries until I got their shapes with the – for me – new tools right without using a new cube for each intersection of shapes. The windowpanes needed to be transparent and slightly mirroring, so I mixed the information of two tutorials until I liked the look in the shading preview.[1] I started looking into the modifiers and found the arrays to be extremely helpful to make up a whole row of windows. However, I also encountered a problem while working on a rotated window: it's difficult to move things in or out on a 45-degree angle. I know there is an option to change the axis, but I did not back then. However, modelling in alignment with the axes and only rotating the mesh afterwards seems like a good solution for a lot of cases now.

As I started the furniture (mattress, bed frame, bedstands, lamps, picture frames) and floorboards, I encountered the problem of not being able to zoom further in which also meant I learned how to change the origin and move around easily in blender after a while.

My next step was to add materials to all the objects. Again, I started off with tutorials until I felt comfortable changing some parts around to achieve a subjectively more appealing look.[2]

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[1]Ryan King Art: *Realistic Glass Shader in Blender Eevee (Tutorial)*. October 2021. https://www.youtube.com/watch?v=JYyUMMboZFk. Darius CG: *How To Model A Glass Window In Blender? | How To Model House Window?* July 2019. https://www.youtube.com/watch?v=HqutwxCzfjs.
[2] Noggi: *Create a Fabric Material in literally SECONDS in Blender 2.9 | b3d*. April 2022. https://www.youtube.com/watch?v=3tmrEQwIKjw. Ryan King Art: *Procedural Plaster Material*. March 2021. https://www.youtube.com/watch?v=EwB3HWcUdEk. REPIX MEDIA: *Blender 2.9 Tutorial – Brushed Metal (Chrome) | Fast and Easy for Beginner!* November 2020. https://www.youtube.com/watch?v=8D4exODUKmk.

For the rest of the materials, I played around with the basic settings until they looked what I had in mind (metal and painted surfaces), sometimes using the materials I had made previously as reference.

Thinking of one of our exercises, I wanted to use images and map them around the picture frames on the wall which proved to be easier than it had been in processing. I imagine mapping more complex, rounded objects will be more demanding, though.

Finally, I started working on the lighting – and found out I should have done this at the start. The different viewports allow for a demo of a lit-up scene, but it will not look the same in rendering. Another lesson I will keep in mind after this: always check how your render looks, not just the different modes in blender. I had had trouble with the material of the windows seemingly not being completely transparent and realized at this point that the 'mistake' was caused by a missing light source.

As I had the sunlight streaming into the room through the windows, I used it as my key source of light. For a fill light, I placed an area light on top of the room to simulate a LED light hose around the top corners, and the two lamps on the nightstands got a point light each as well as a glowing material around their sphere.

What I had kept for last were the more complex shaped pillows and blanket, for which I followed a tutorial that introduced physics.[3] For the pillows, this was rewarding, but creating a blanket with a bit of thickness to it without any clipping took a lot more than anticipated. For the material, I used another screenshot.

Overall, I learned how to use the basics of blender, what its different modes can provide, how much of a difference it makes to do everything by hand or to use the tools in this program correctly. Blender seems like an impressive, resourceful tool I am glad we got introduced to, even if there are a lot of features I have not delved into yet.

The CG Essentials: *Easy MIRROR MATERIAL in Blender for Cycles and Eevee!* July 2020. https://www.youtube.com/watch?v=SLChjoLf5jg.
[3] Bro 3D: *Blender bed – create a realistic bed in blender in 10 mins | (Beginner tutorial)*. October 2021. https://www.youtube.com/watch?v=ZBqBkM7w3ik.