

# COLT 1849 POCKET REVOLVER

## DEVELOPMENT LOG

Thomas Clark



# BRIEF

- **Make a game ready version from the reference alongside 1 additional weapon skin**
- **The weapon is for a first-person game, as such pay attention to dirt and grime**
- **Feel free to add any decorative features to the weapon**
- **use of Megascans is ok for diorama presentation purposes**
- **Skin variation should use the same UVs and should be just a material swap.**
- **The weapon should not be more than 30k Tris.**
- **Use as few materials as possible to achieve the best outcome**
- **Textures size = 2048**
- **No Nanite.**



**RESEARCH**

# RESEARCH



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miro

miro

# RESEARCH

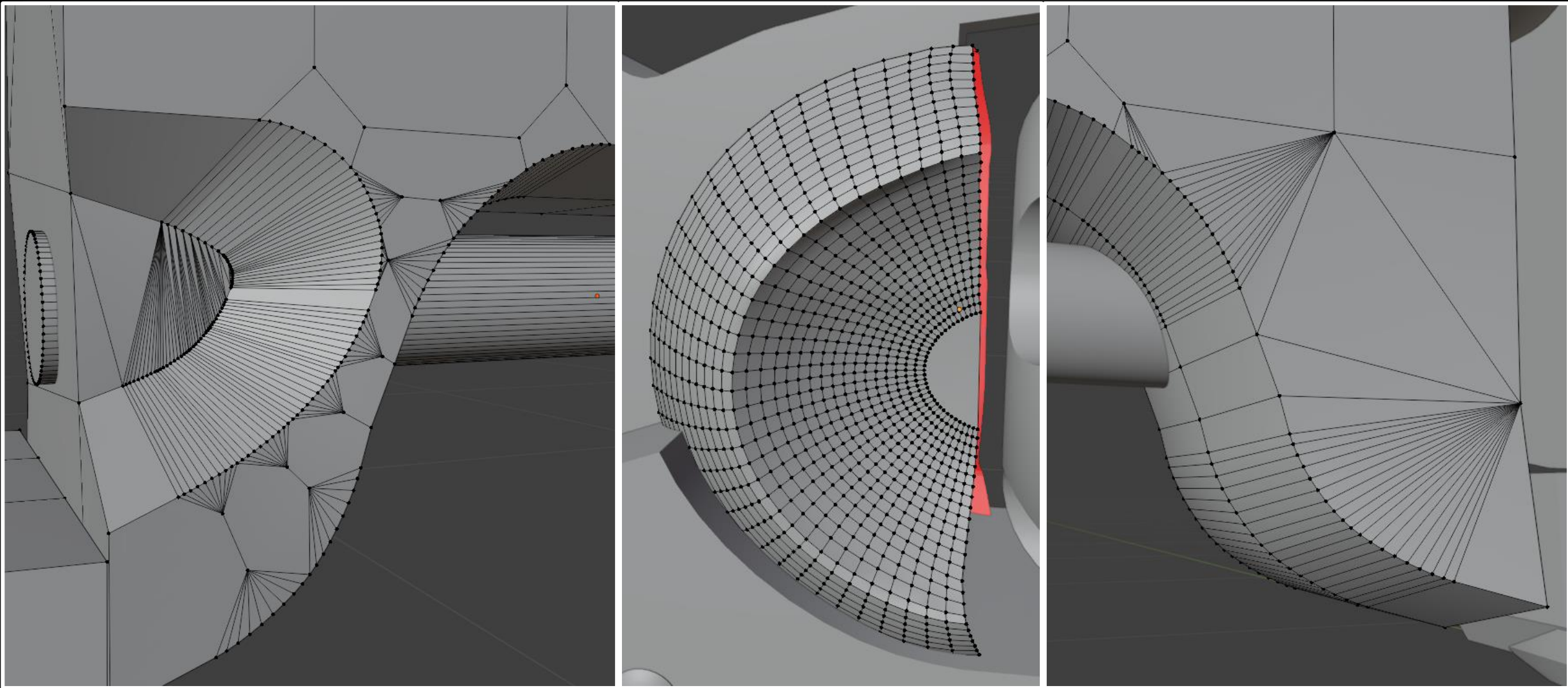


# MODELLING

# BAD MID POLY MODELLING



## BAD MID POLY MODELLING

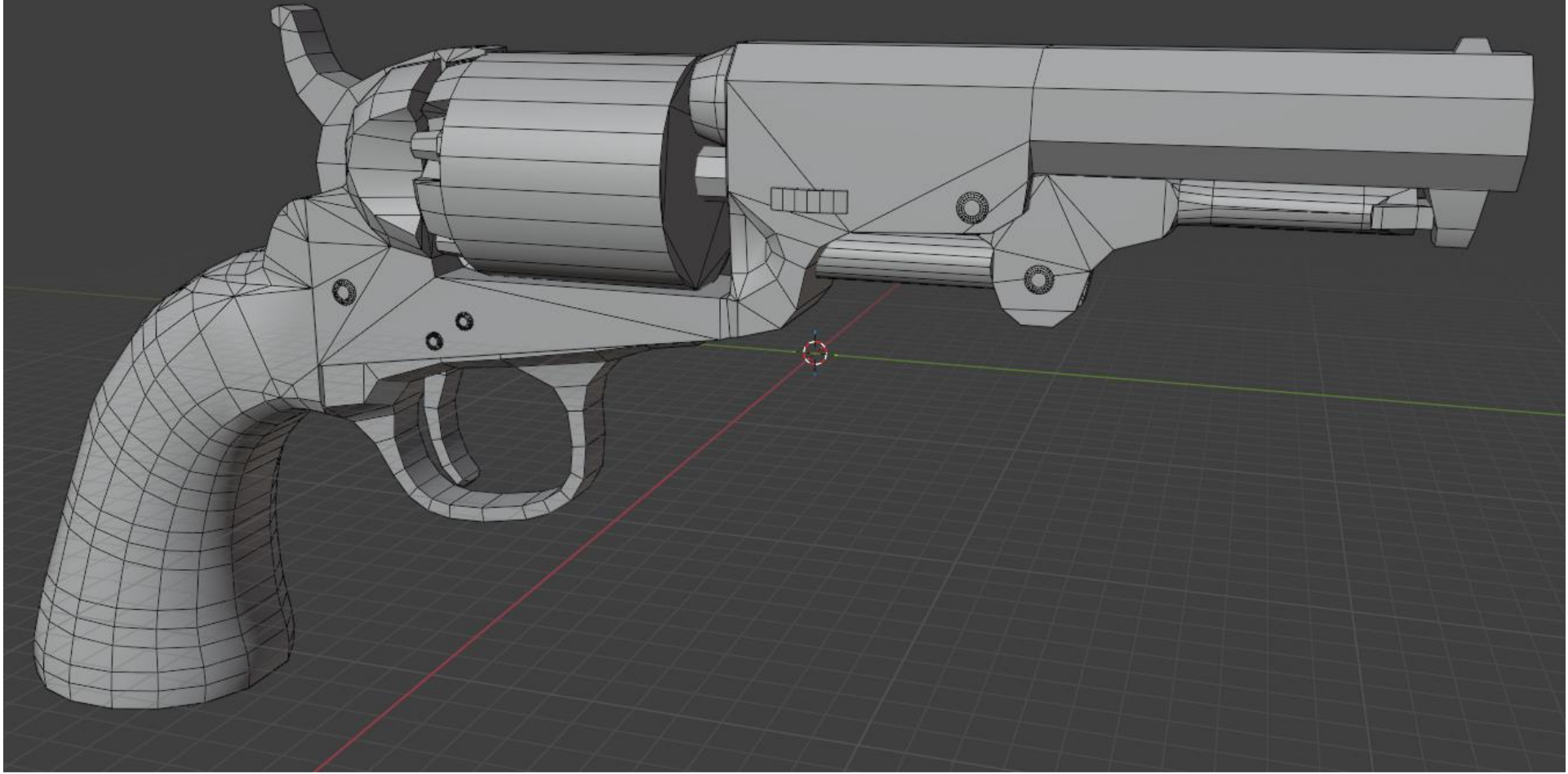


I started with a mid-poly workflow, trying to balance clean topology with smooth forms. I kept adding more geometry than I needed. Eventually I pulled back toward a low-poly approach, focusing more on efficient shapes and cleaner silhouettes. These are some images of the mid-poly that I scrapped.

# LOW POLY MODELLING

Low-Poly

Tris - 3,734

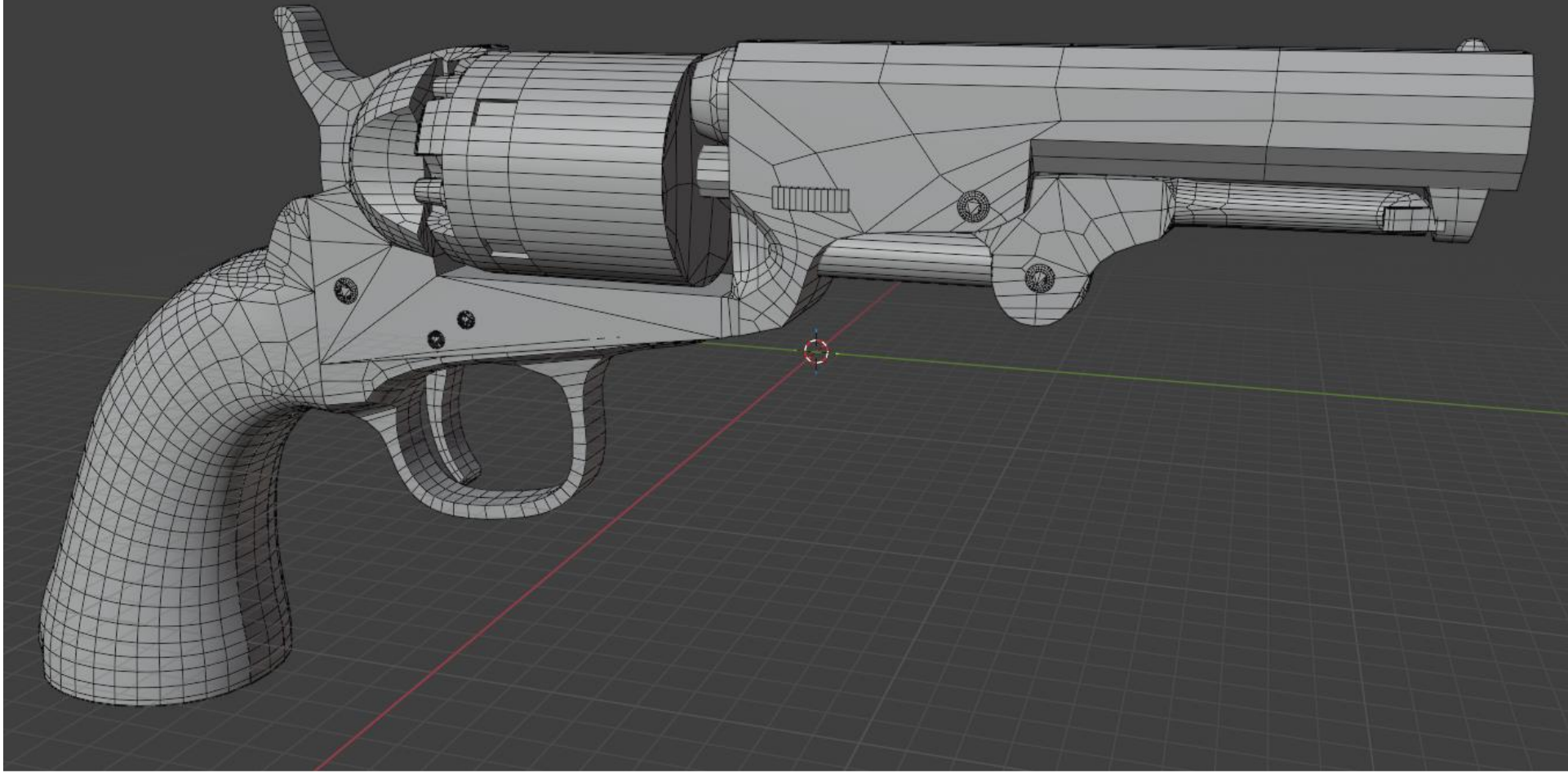


Over Easter, I switched away from my mid-poly workflow because retoping the model would have taken too long. I moved to a low-poly approach instead, but ended up pushing it too far and reducing the geometry more than I wanted, losing some of the form and smoothness I was aiming to keep.

# LOW POLY MODELLING

Low-Poly after Sub-d

Tris – 11,568

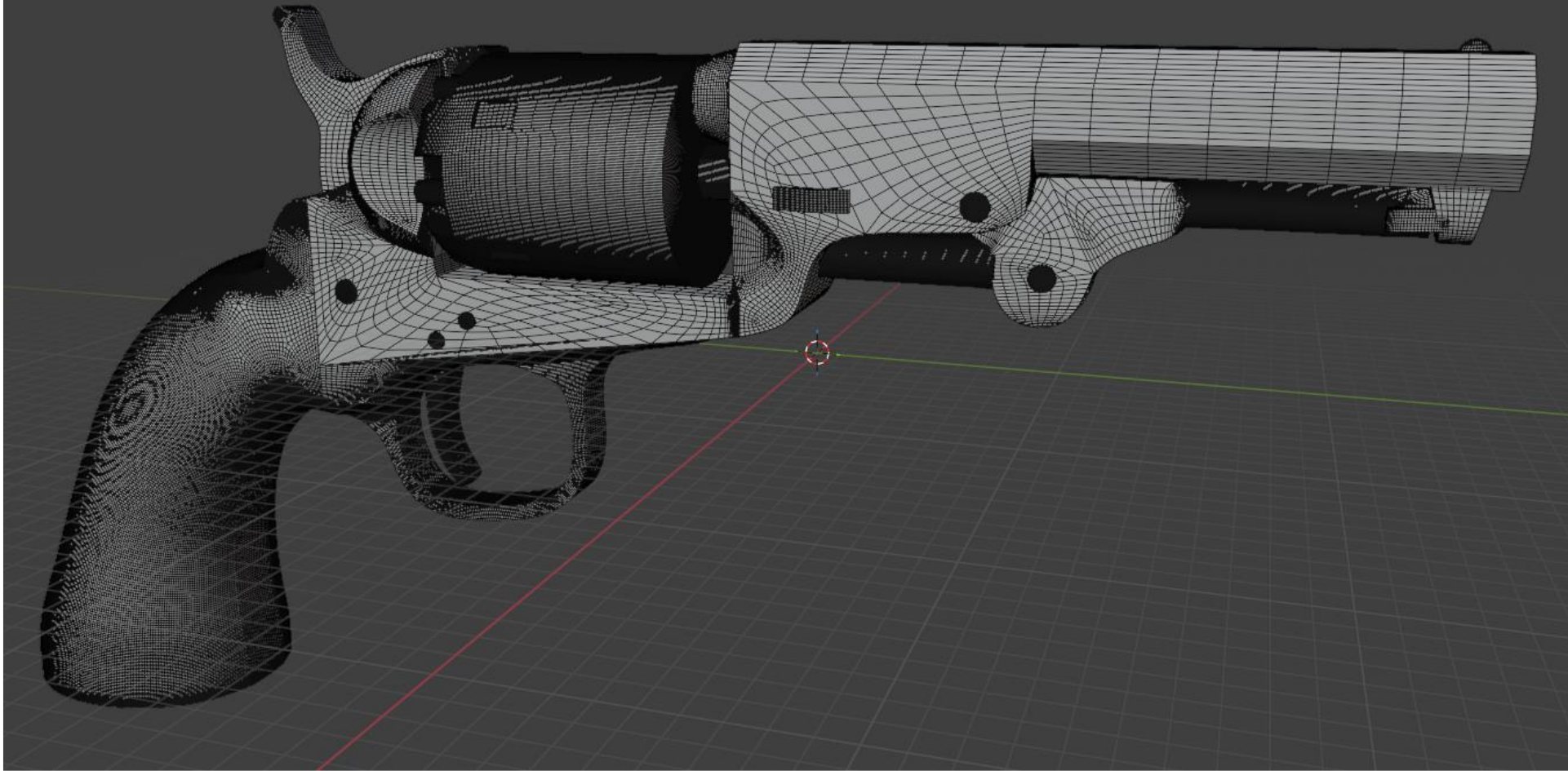


I fixed this by using Blender's subdivision modifier on just the first level, which helped smooth out the faceting without adding excessive geometry. It gave the models a cleaner appearance while still keeping the low-poly workflow efficient

# HIGH POLY

High-Poly

Tris – 590,608



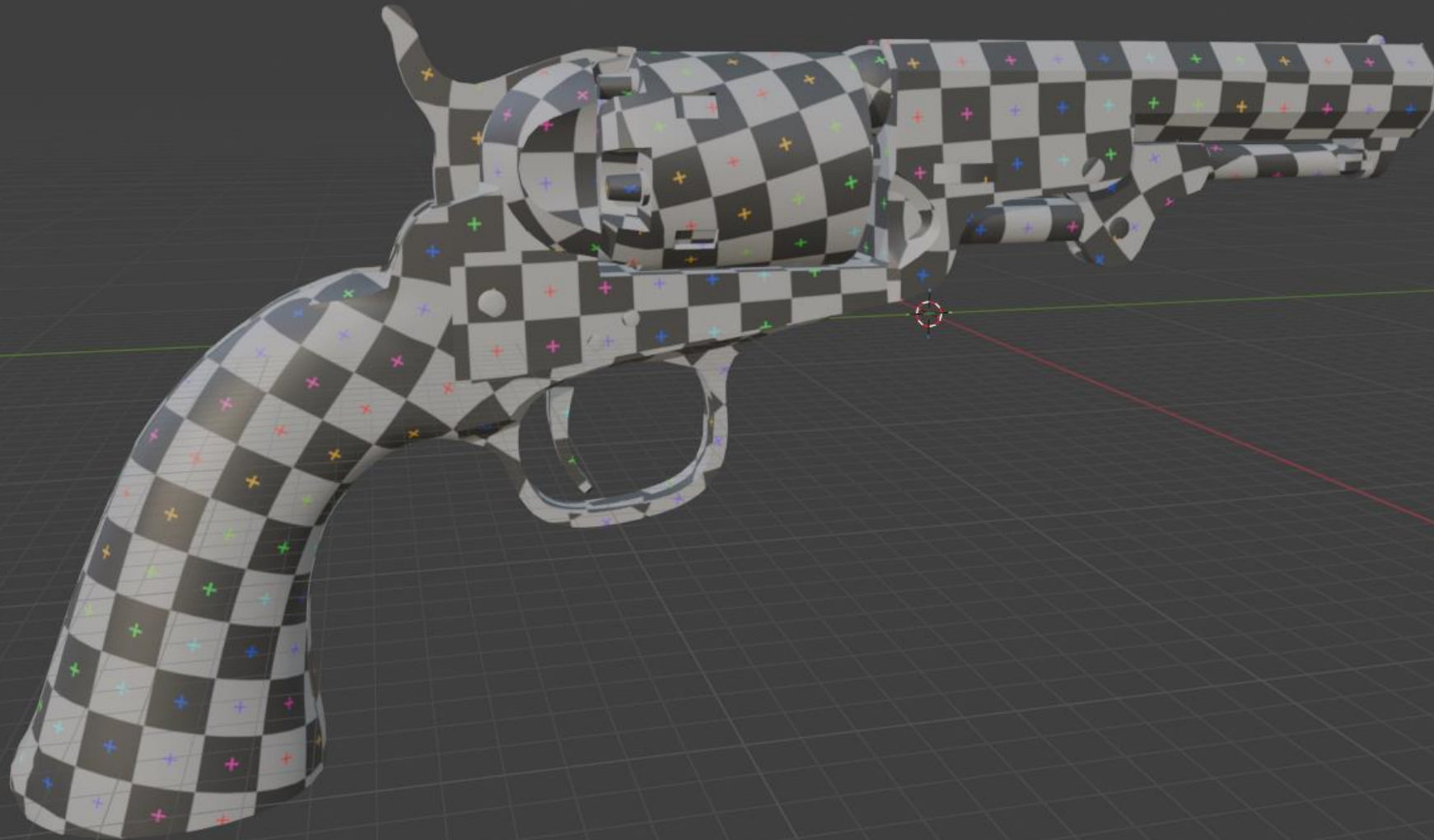
**UNWRAP**

# UNWRAP

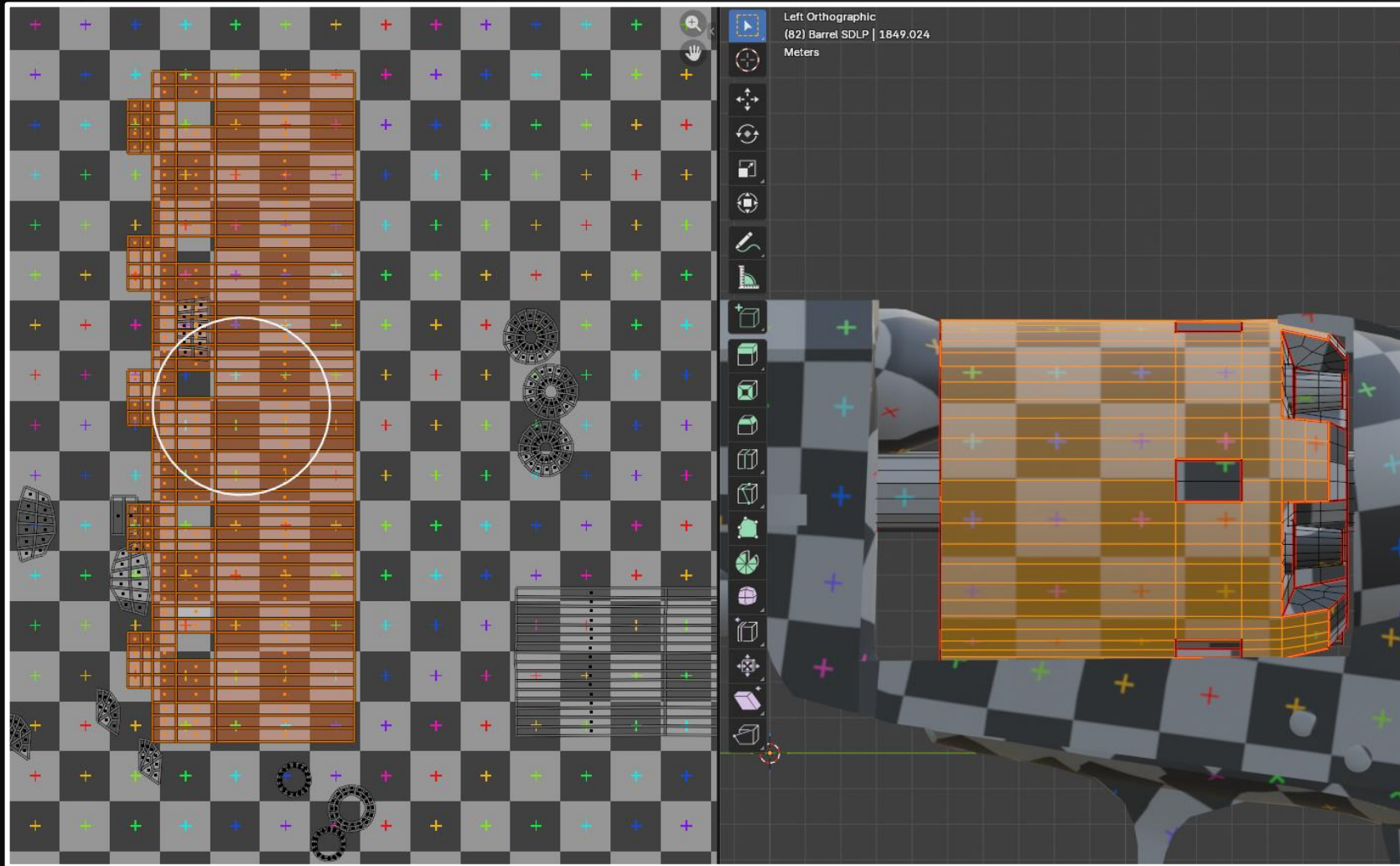
User Perspective

(82) Scene Collection | Body Front LP

Objects 12  
Vertices 6,157  
Edges 12,100  
Faces 5,964  
Triangles 11,566

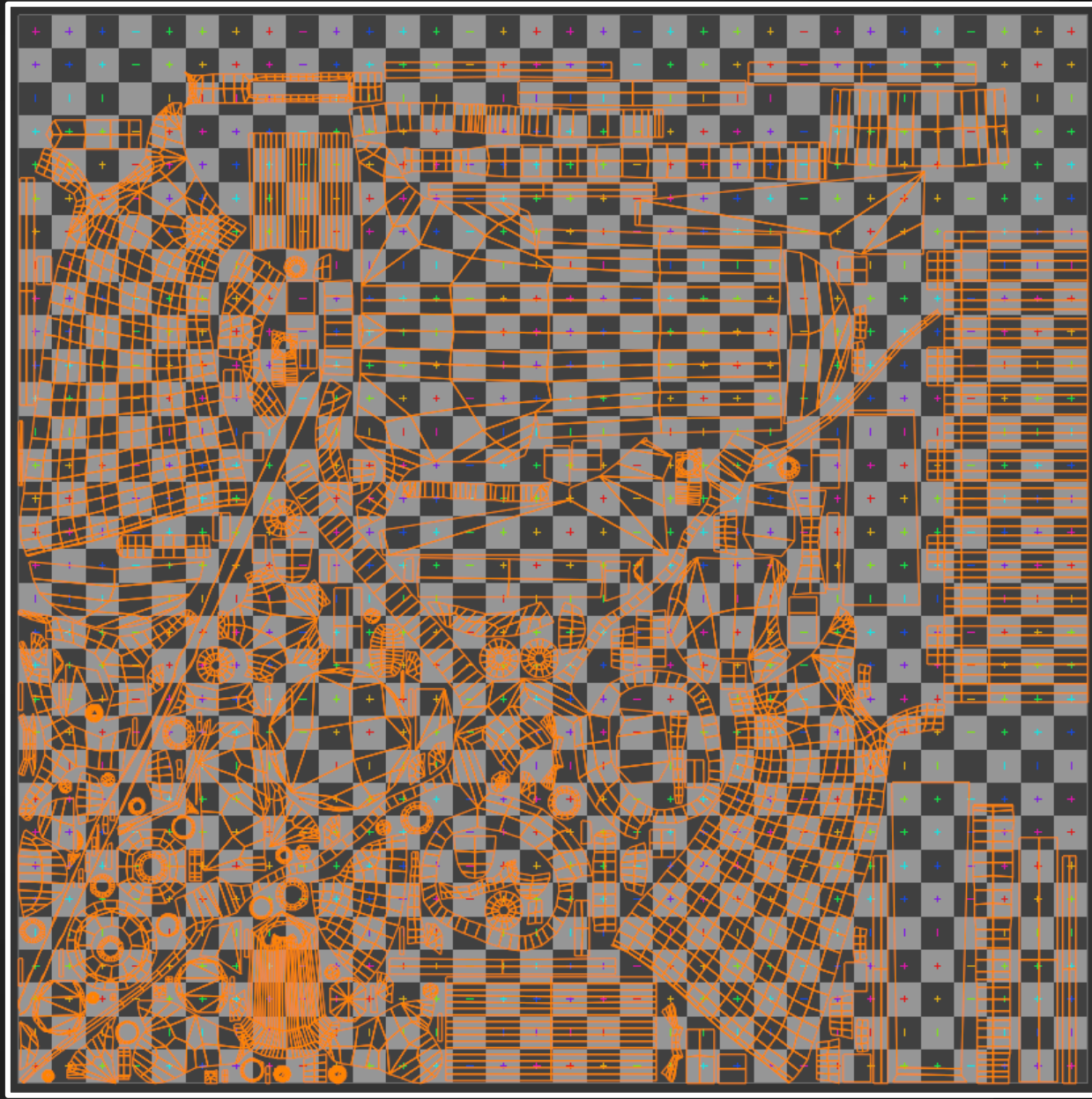
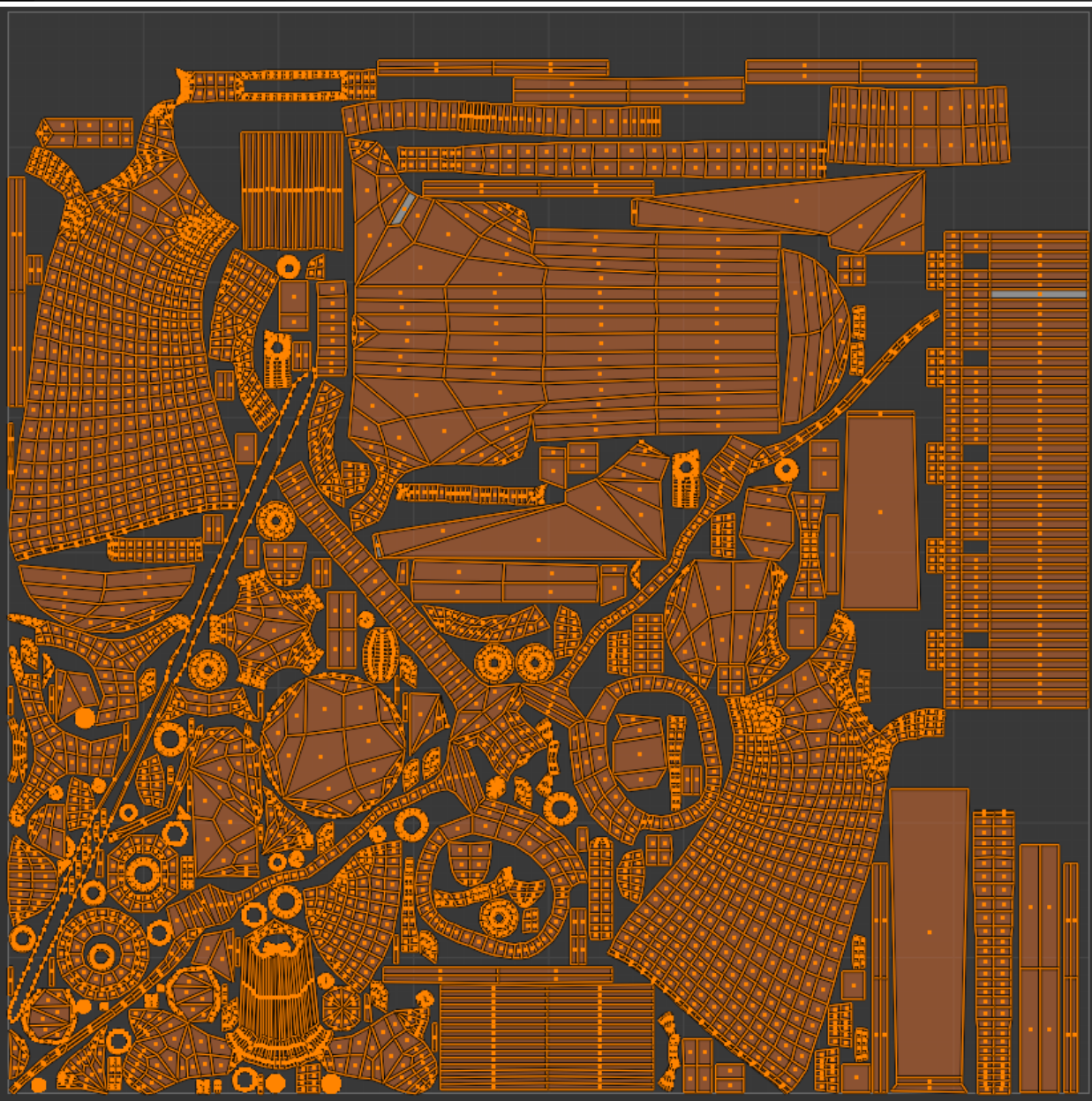


# UNWRAP



I spoke to a lecturer about adding the engraving onto the barrel, and they advised me to straighten the UVs in the area where the engraving would be placed. This was important because having straight UVs makes it much easier to apply detailed textures. In Blender, I adjusted the UV islands by selecting the faces around the barrel and using the UV editing tools to align and straighten the edges into a cleaner layout. This gave me a much more even surface to work on, making the engraving cleaner, sharper, and easier to position accurately inside of substance painter.

# UNWRAP

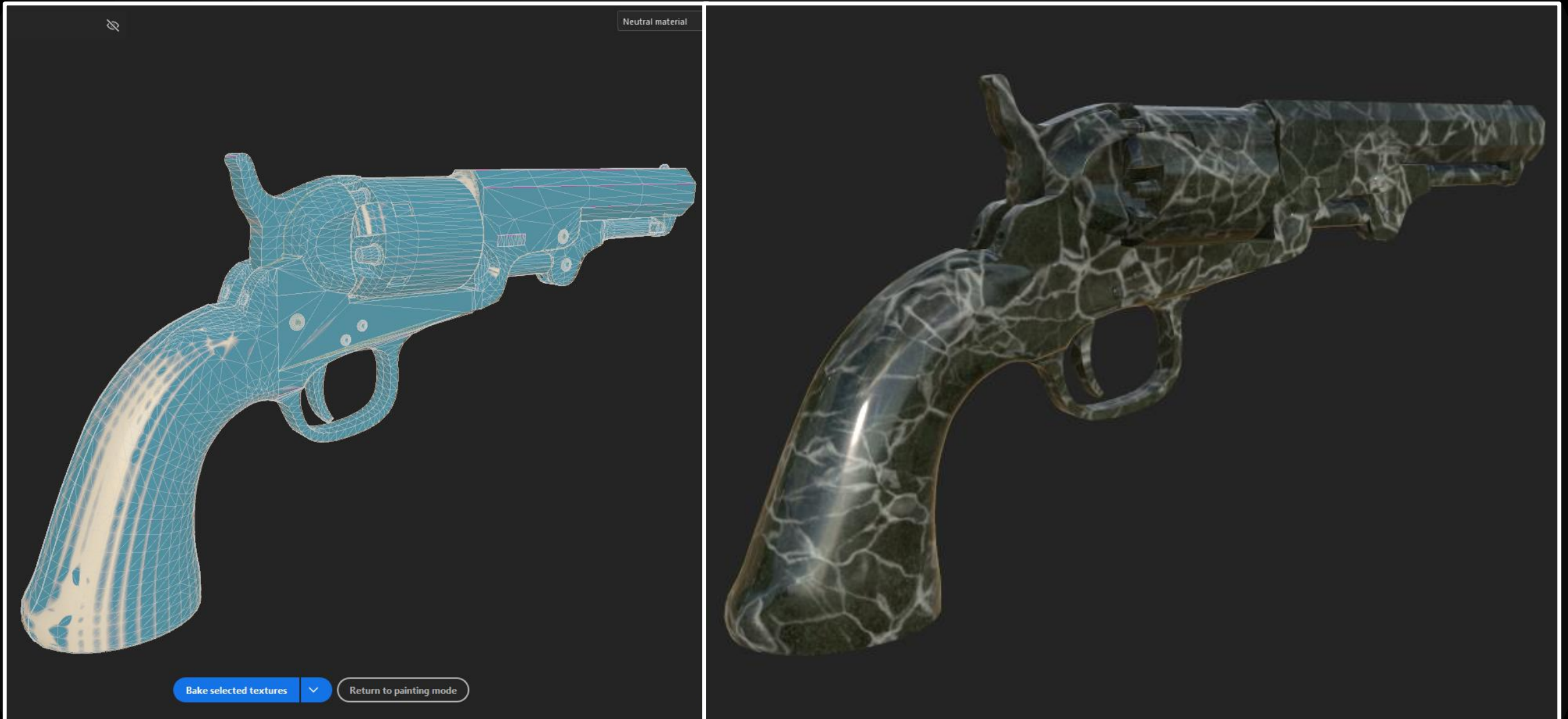


**BAKING / TEXTURING**

# HIGH POLY POLISH IN ZBRUSH



# BAKING / TEST MATERIALS



# ENGRAVING ALPHA

A Colt advertising sheet of the early 1850's, showing the cylinder engraving of the Dragoon, Navy, and Pocket Model revolvers.



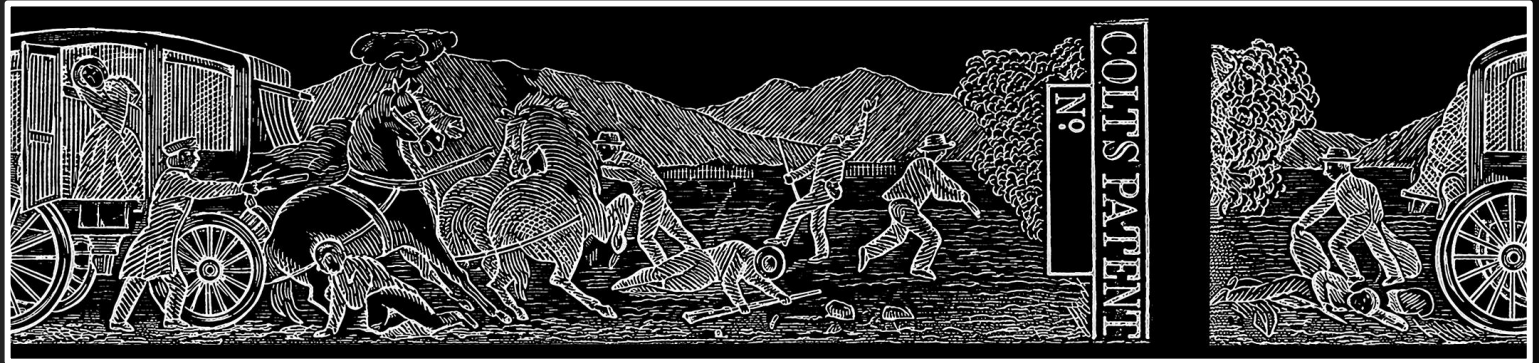
Colt's Patent Repeating Pistols.

Manufactured at HARTFORD, CONN.

BEWARE OF COUNTERFEITS & PATENT INFRINGEMENTS.

Orders for Arms may be addressed to me at Hartford, Conn. or New York City

Saml. Colt



For the engraving, I found a reference image on Google and then used Google Lens to find a clearer version of the design on a metal plate. I brought this into Adobe Photoshop, used the upscaler to improve the quality, and then cleaned it up into a black and white alpha for texturing. This gave me a much sharper and cleaner engraving to use on the model.

# ENGRAVING RESULT



# TEXTURING EARLY DAYS



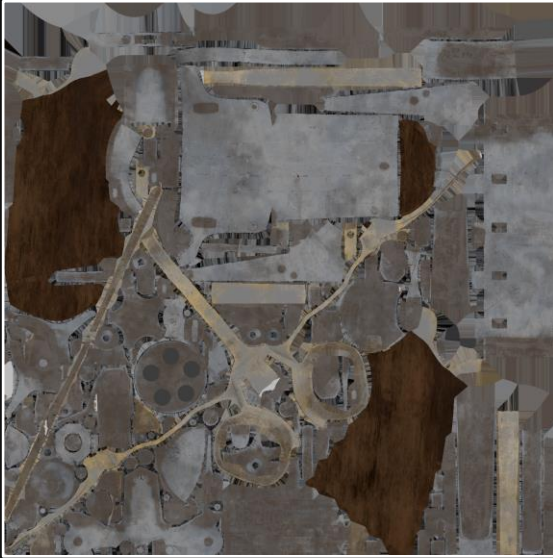
During the early stages of texturing, some of the scratches and damage looked far too deep and exaggerated, which made the material feel unrealistic. The surface started to look overly worn instead of naturally used, especially on the metal areas.



Another issue was that the metal looked too washed out and flat, making it feel unrealistic. I adjusted the metallic and roughness values to create stronger reflections and added more surface variation.

# TEXTURE SHEETS

Brief



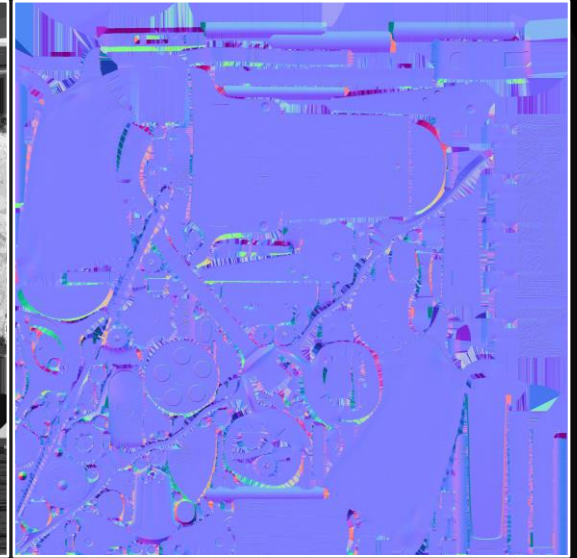
Base Colour



Roughness



Metallic

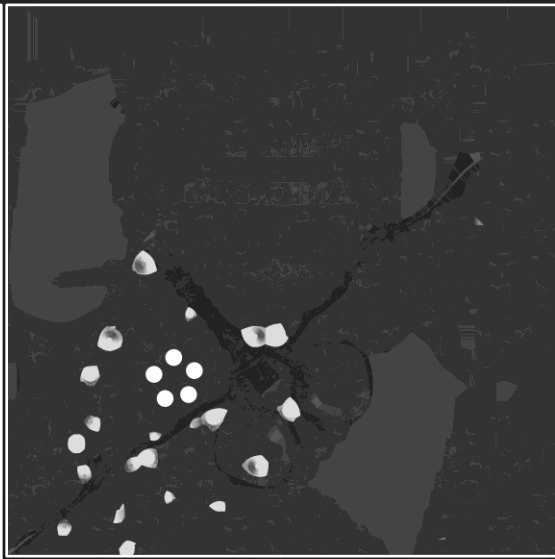


Normal

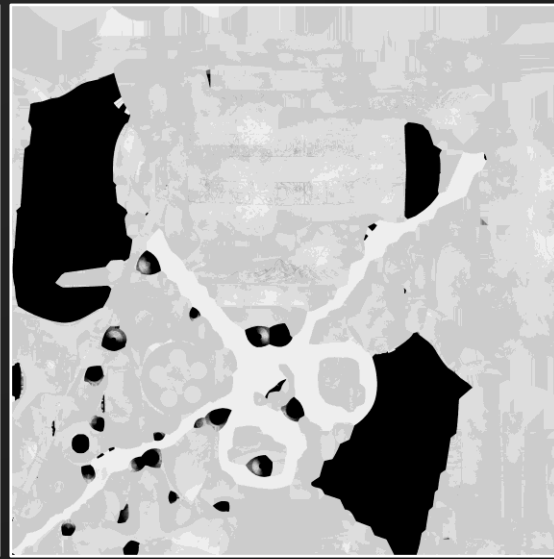
Skin



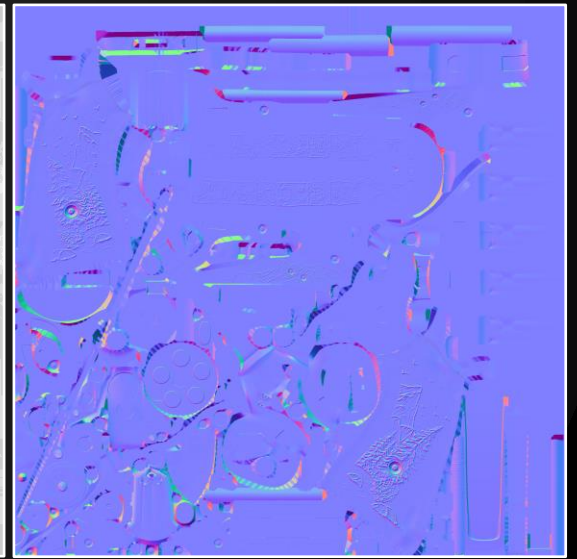
Base Colour



Roughness



Metallic



Normal

# TEXTURING



# TEXTURING



**RENDERS**

# SETTING UP RENDER



For my final renders in Unreal Engine 5, I created a scene where the colt was presented inside a display case. I wanted the environment to feel clean and professional, so the model became the main focus of the render. I used assets from Fab to build parts of the scene, including props and display elements, which helped create a more realistic presentation around the weapon.

## BRIEF RENDERS



# BRIEF RENDERS



# BRIEF RENDERS



# BRIEF RENDERS



# SKIN RENDERS



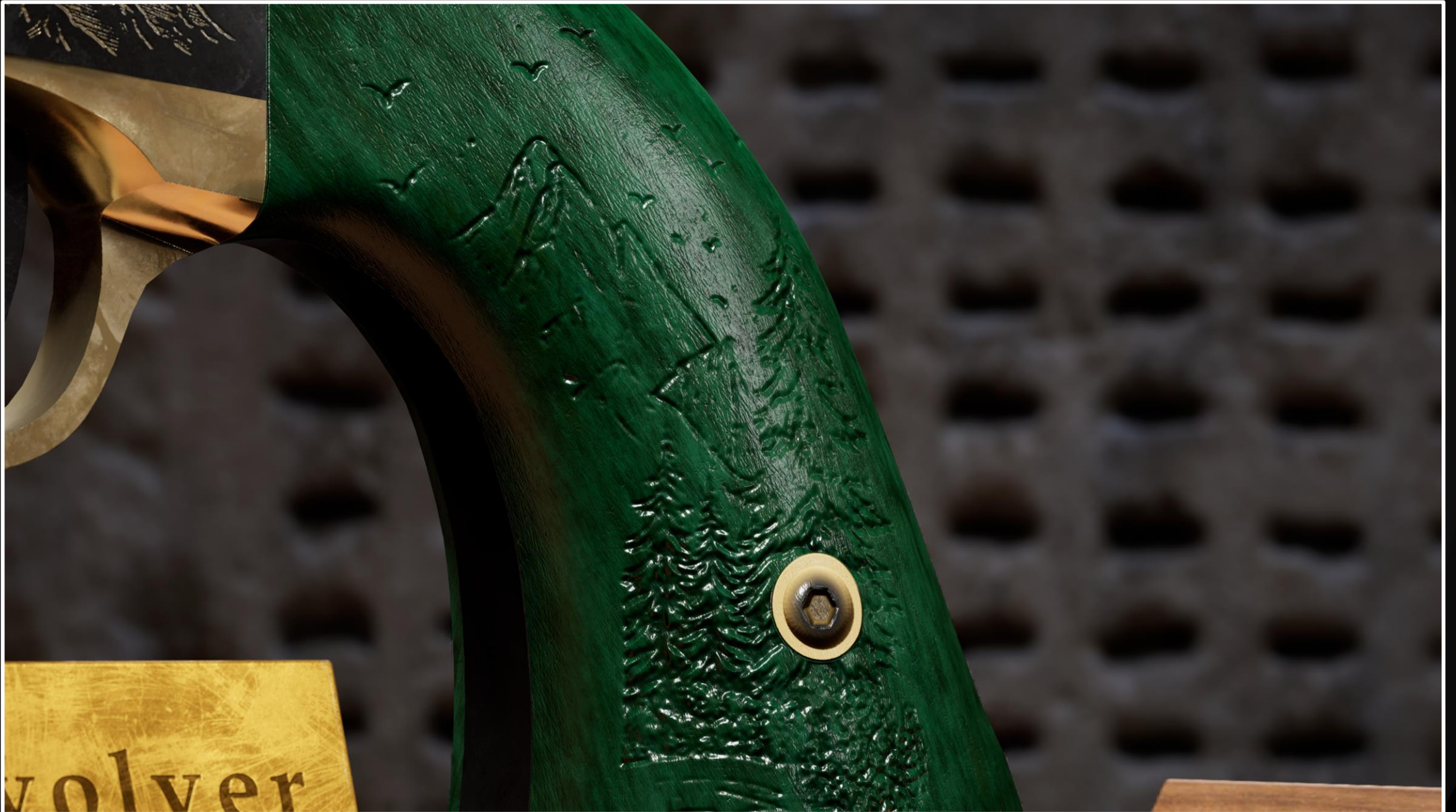
# SKIN RENDERS



# SKIN RENDERS



# SKIN RENDERS



# **CRITICAL EVALUATION**

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## Research and Planning

For this project, I created a detailed 3D model of the Colt 1849 Pocket Revolver based on the reference provided by Wushu Studios. Before starting the modelling process, I looked at close-up images of the engravings, materials, mechanical parts, and overall shape so I could understand how the weapon was built in real life. Since the original reference only showed certain angles, I used extra images online to fill in the gaps and get a better understanding of the smaller details.

## Project Development

The revolver was modelled in Blender. At the start of the project, I originally picked a mid-poly workflow because I wanted to focus on getting the shapes and engraved details looking as accurate as possible without worrying too much about optimisation straight away. This worked well during the early stages, especially when blocking out the silhouette and adding smaller mechanical details, but as I went on, I realised it was becoming far too time-consuming to optimize the mesh properly and reduce the polycount afterwards. Over the Easter break, I decided it would be more efficient to restart the model and switch to a low high workflow instead. Although it felt frustrating having to redo work, it ended up improving the project overall because the topology became much cleaner and easier to manage. Rebuilding the colt also helped me understand the importance of planning topology earlier in the workflow, especially when creating game-ready assets. During the UV unwrapping stage in Blender, I focused on keeping the UV islands clean and straight to make the texturing process easier in Substance Painter. This helped details such as engravings and scratches flow naturally across the model without stretching. Looking back, I should have prioritised the texel density more towards the first-person view areas of the revolver, giving parts like the grip and hammer more texture space since they would be seen closest to the camera. The texturing was completed in Substance Painter. I created materials for the metals, wooden grip and engraved surfaces while trying to keep the revolver looking realistic without overdoing the wear. Early on, some of the scratches looked too harsh and made the revolver feel damaged rather than naturally worn, so I toned them down and refined the roughness values. I also noticed the metal looked too flat and washed out, lacking the proper metallic look I was aiming for. After adjusting the roughness, contrast and reflections, the materials started to feel much more believable.

# CRITICAL EVALUATION

## Unreal Engine Renders

The final renders were completed in Unreal Engine 5. I wanted the presentation to feel cinematic and give the impression that the revolver was sitting inside a display case in a museum. To do this, I created a small render environment using FAB assets and textures. Lighting ended up being one of the most important parts of the presentation. I used softer shadows and controlled highlights to help bring out the engravings and metallic surfaces without making the revolver look overly glossy. I also experimented with different camera angles to show off the silhouette and finer details of the model. Rendering the asset in Unreal Engine 5 made the whole project feel much more professional and helped push it closer to the quality you would expect in a portfolio piece for the games industry.

## Challenges

The biggest challenge I faced during this project was having to restart my model because retoping would of taken too long on my original mid-poly. I then went completely the other way and made my low poly far to low and could visually see faceting. To solve this, I used blenders subdivide on the lowest setting, and it worked great. Choosing to start again early and have the easter break to catch up meant I was not far behind the rest of the of my peers. Another challenge was getting the materials to feel believable. The metal either looked too rough, too shiny, or completely flat depending on the lighting, so I spent a lot of time adjusting roughness and metallic values inside Substance Painter. Small tweaks made a huge difference to the final result. The scratches and wear also took a while to get right because it was easy to make the revolver look unrealistic if the damage was too strong. The rendering stage also came with its own issues. Since the revolver was the main focus of the scene, every little detail became noticeable under close lighting. This meant I had to constantly go back and refine textures, materials and even parts of the model itself to improve the overall presentation.

# CRITICAL EVALUATION

## Industry Comparisons

Compared to industry standard weapons, my model demonstrates a good understanding of hard-surface modelling, material definition and rendering composition. The project also highlighted areas that would need further improvement to reach a higher AAA standard, particularly in areas such as topology efficiency, texel density management and surface detailing. Professional game assets are often designed with animation, performance optimisation and first-person camera views in mind, meaning even greater attention is placed on edge flow, texture resolution and small mechanical details. Completing this project helped me better understand these industry expectations and gave me more experience working within a professional-style asset pipeline.

## Conclusion

Overall, this project was useful for improving my skills across modelling, texturing and rendering. Creating the Colt 1849 Pocket Revolver allowed me to build on my hard-surface modelling skills in Blender, improve my understanding of realistic materials in Substance Painter and gain more experience presenting assets inside Unreal Engine 5. Even though there were challenges throughout the project, especially with topology, UVs and material definition, overcoming them helped me improve both technically and creatively. I'm happy with the outcome and feel like the project successfully captures the look and detail of the original Wushu Studios reference while also showing the progress I've made as a 3D artist.

**THANKS**