

Post/Cleanup Processing

With ZBrush, Maya, and Photoshop

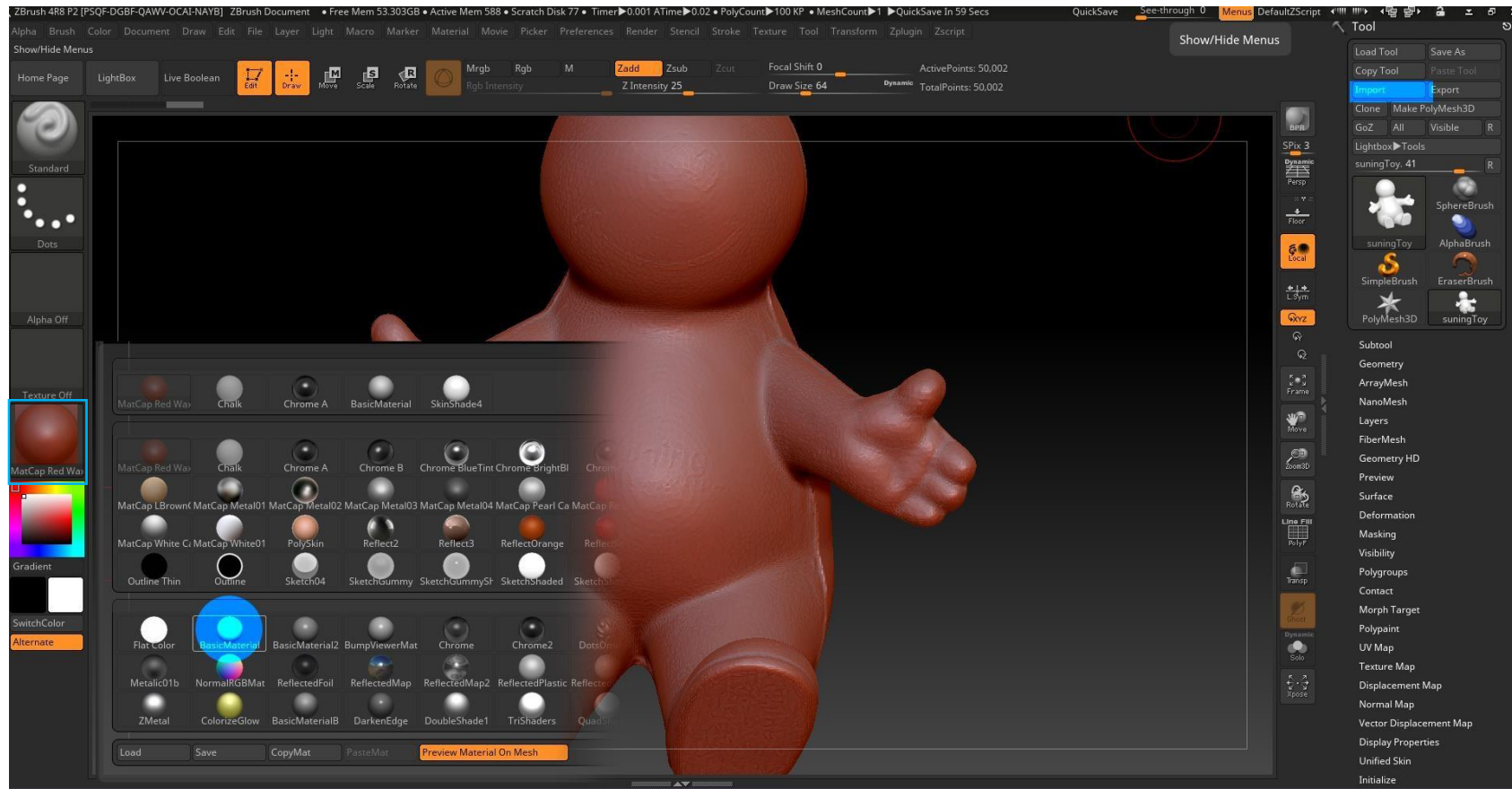
USA Suning R&D Center

Innovation Application Lab

*recommend viewing at 130%



1. Zbrush: Position, Retopo & UV

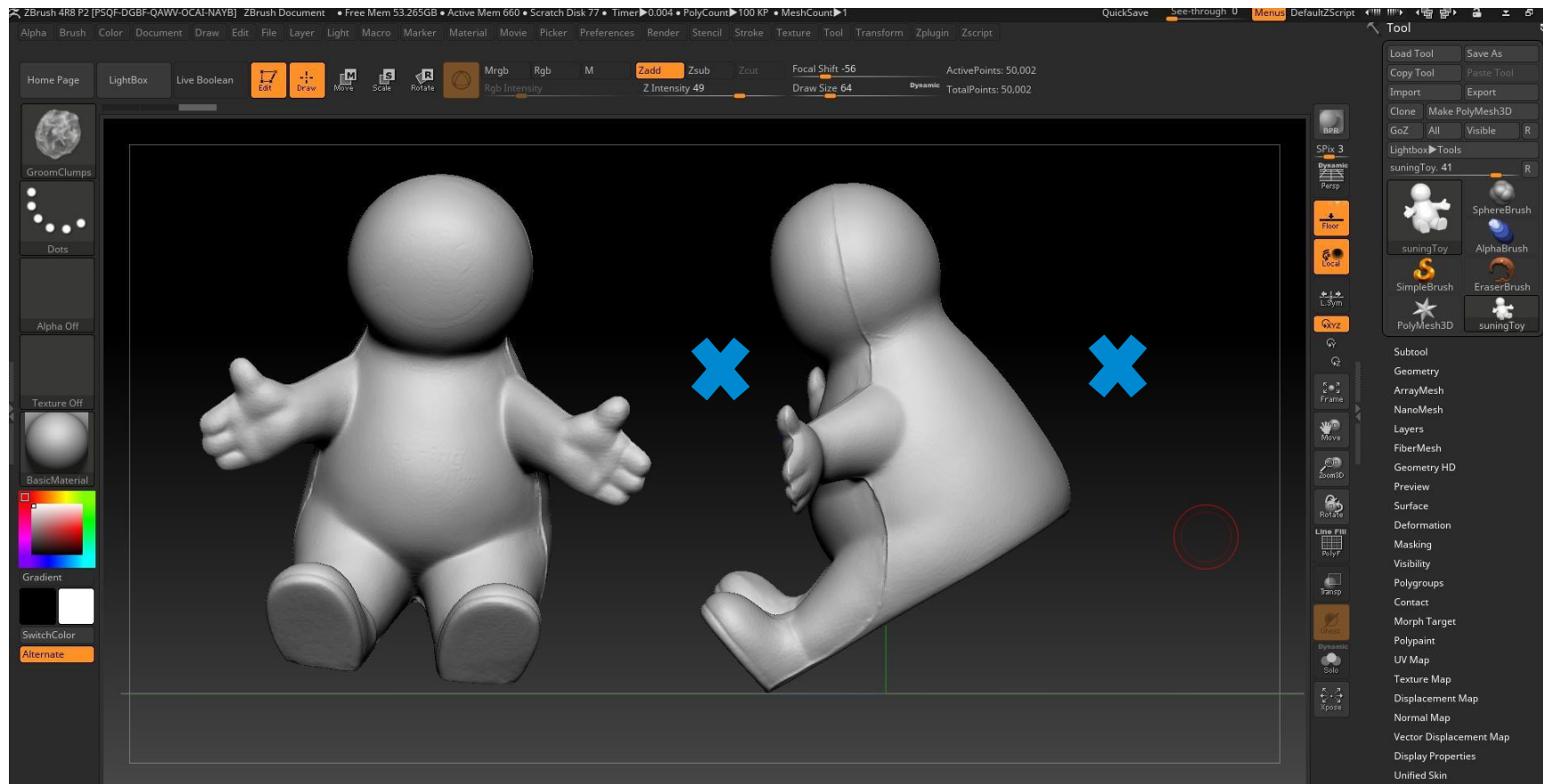


On the top

right, click **Import** and select the highrez model (the .obj from the scanner OR photogrammetry). Click and drag in empty space to place the model onto the canvas, press **T** to turn on **Edit Mode**, then **F** to **Focus**

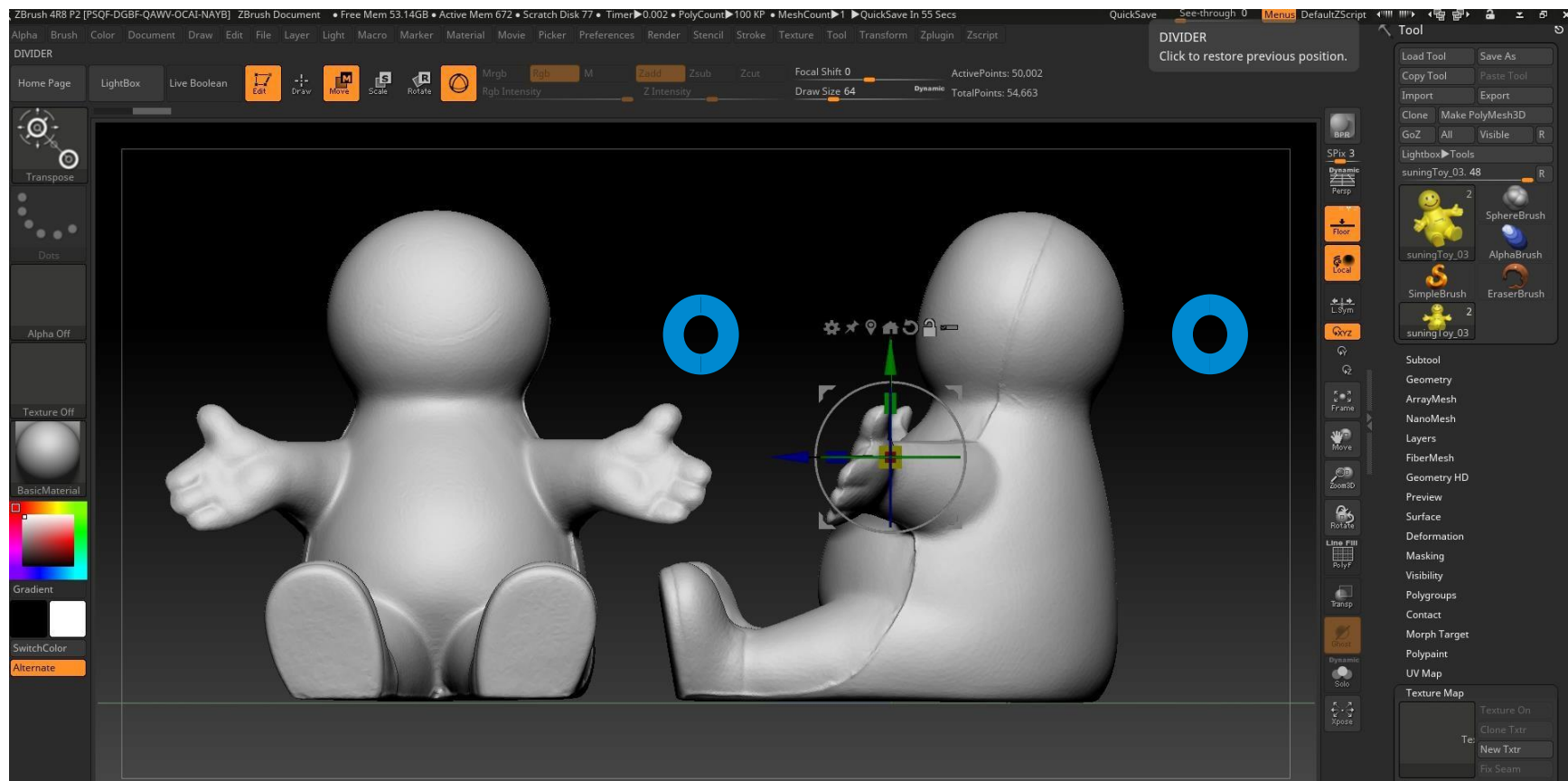
2. On the left, click on the sphere ball on the left to change the material > MatCapRedWax (default) to **BasicMaterial**

POSITION



4. Use the **Rotate Mode (R)** to fix the position of the model so it looks about right from each view. **SHIFT + Drag** to snap into views.

5. After rotated, you can use the **Move Mode (W)** to move it closer to the floor (**SHIFT + P** or click **Floor button**). Return to **Draw Mode (Q)**.



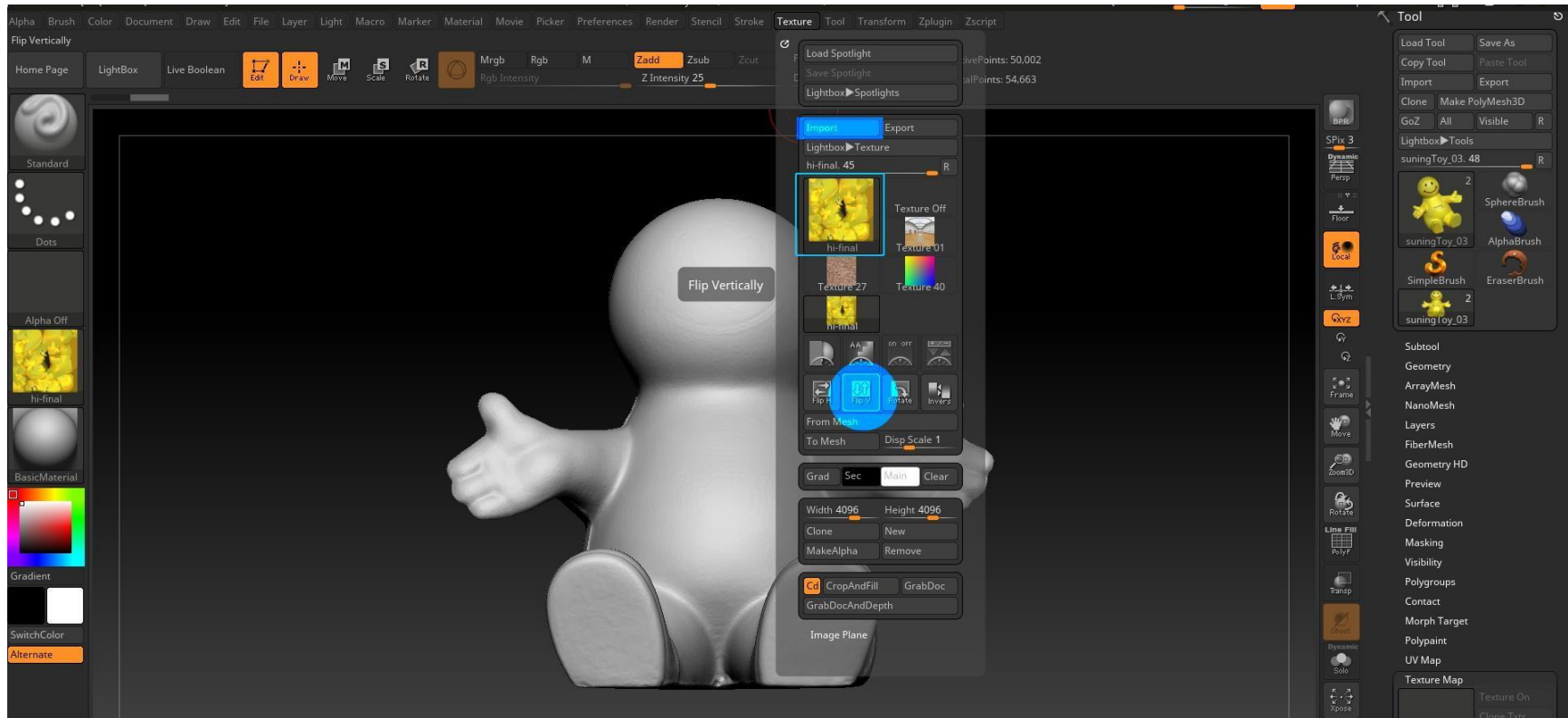
6. Duplicate the model and name it **_lowPoly** (you will be working on this lowPoly model now, hide & ignore the highPoly until the final **Export**)

NOTE

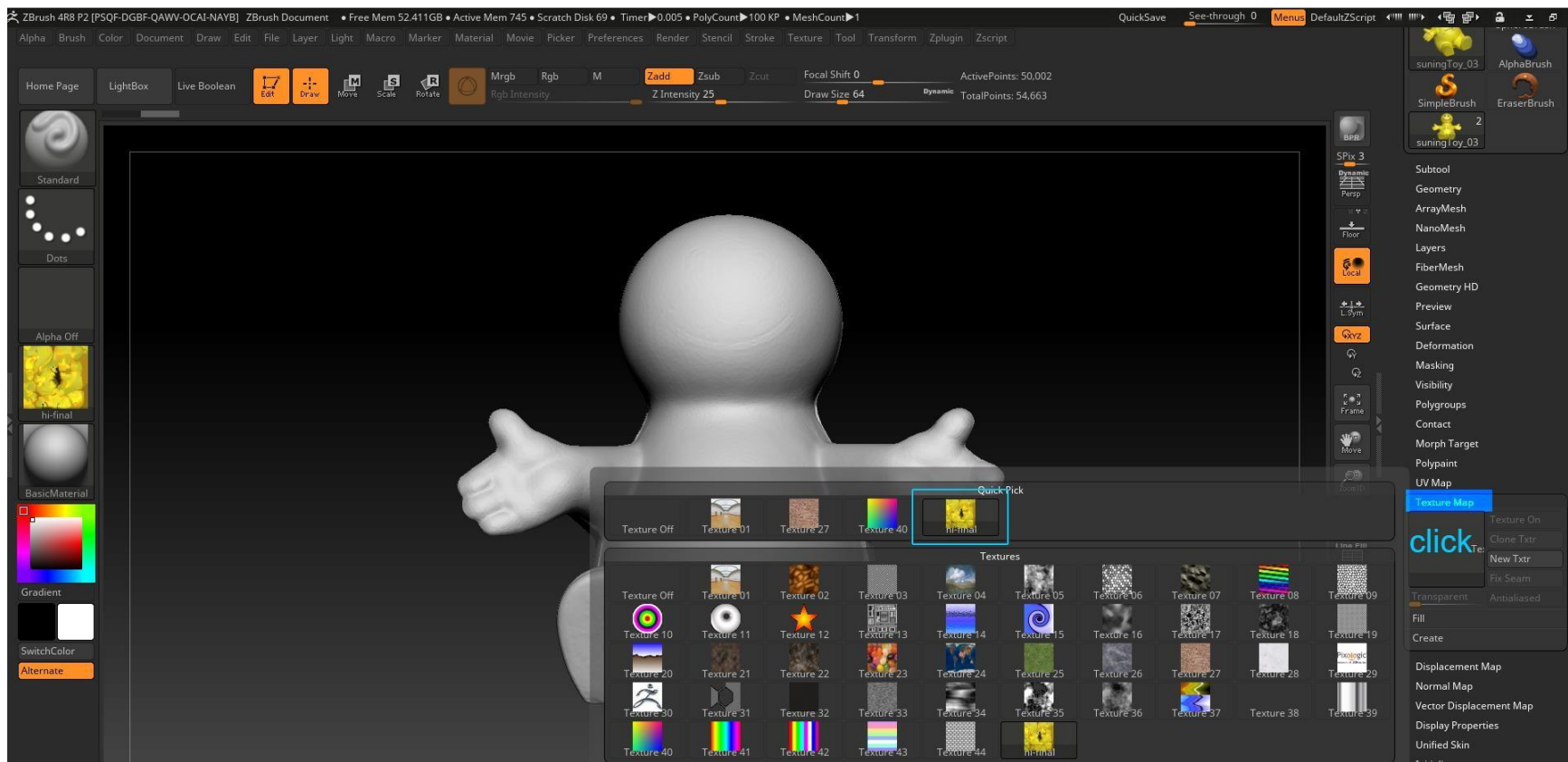
Since we have changed the position of the model, we no longer can use the original .obj for texture baking in the final steps in Maya, which means we will need to export the high poly version again from ZBrush.

TEXTURE

* We will apply the previously texture from scan/photogrammetry just so we get an idea of where the edges should be! *

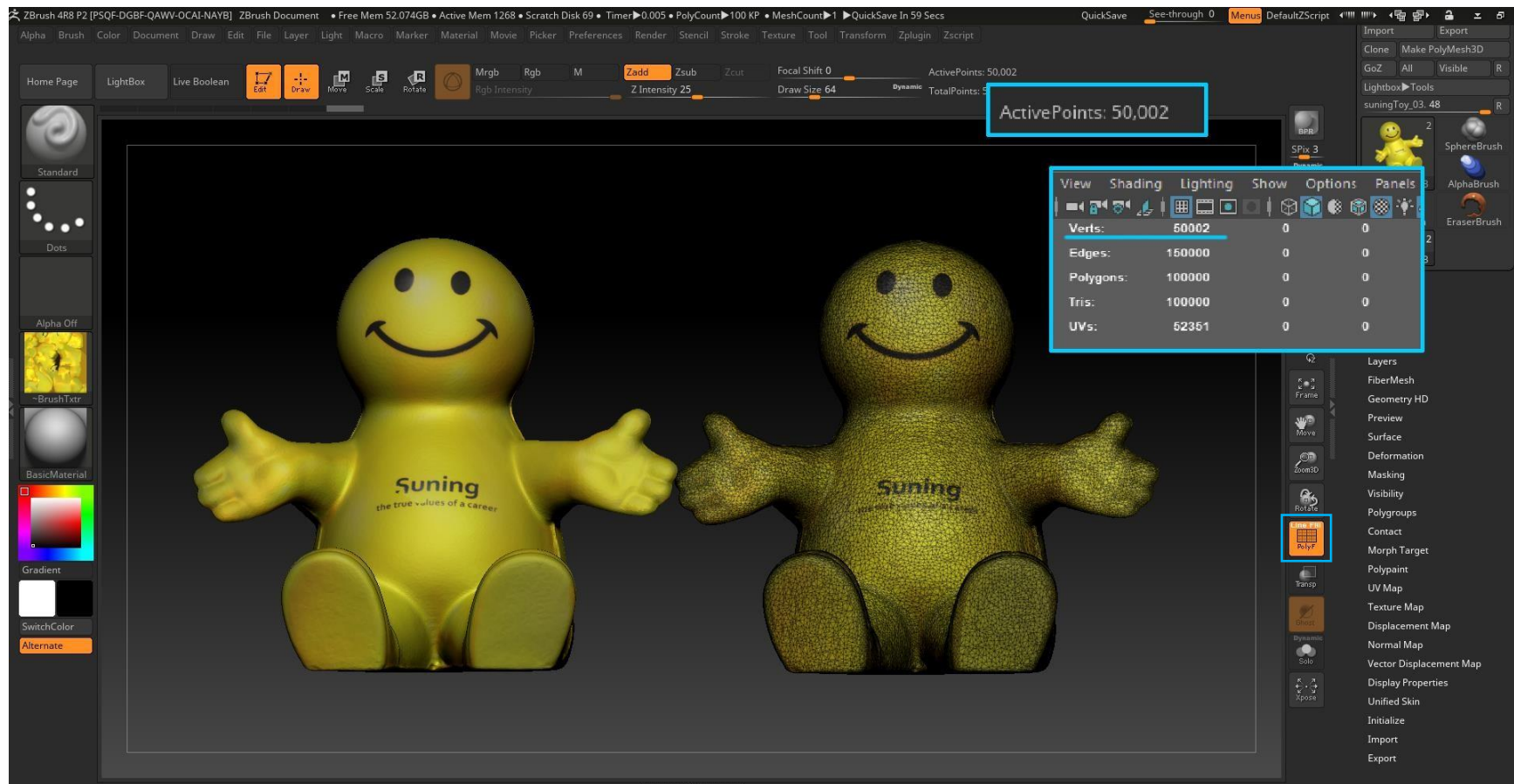


7. Click **Texture** > Import > select the texture map > click **FlipV** button under texture settings. (Zbrush reads the texture up-side-down vertically)



8. On the right, open up **Texture Map** > click on the empty square > select the texture (newly imported images should appear at the bottom)

9. Now you should see the texture on the model.



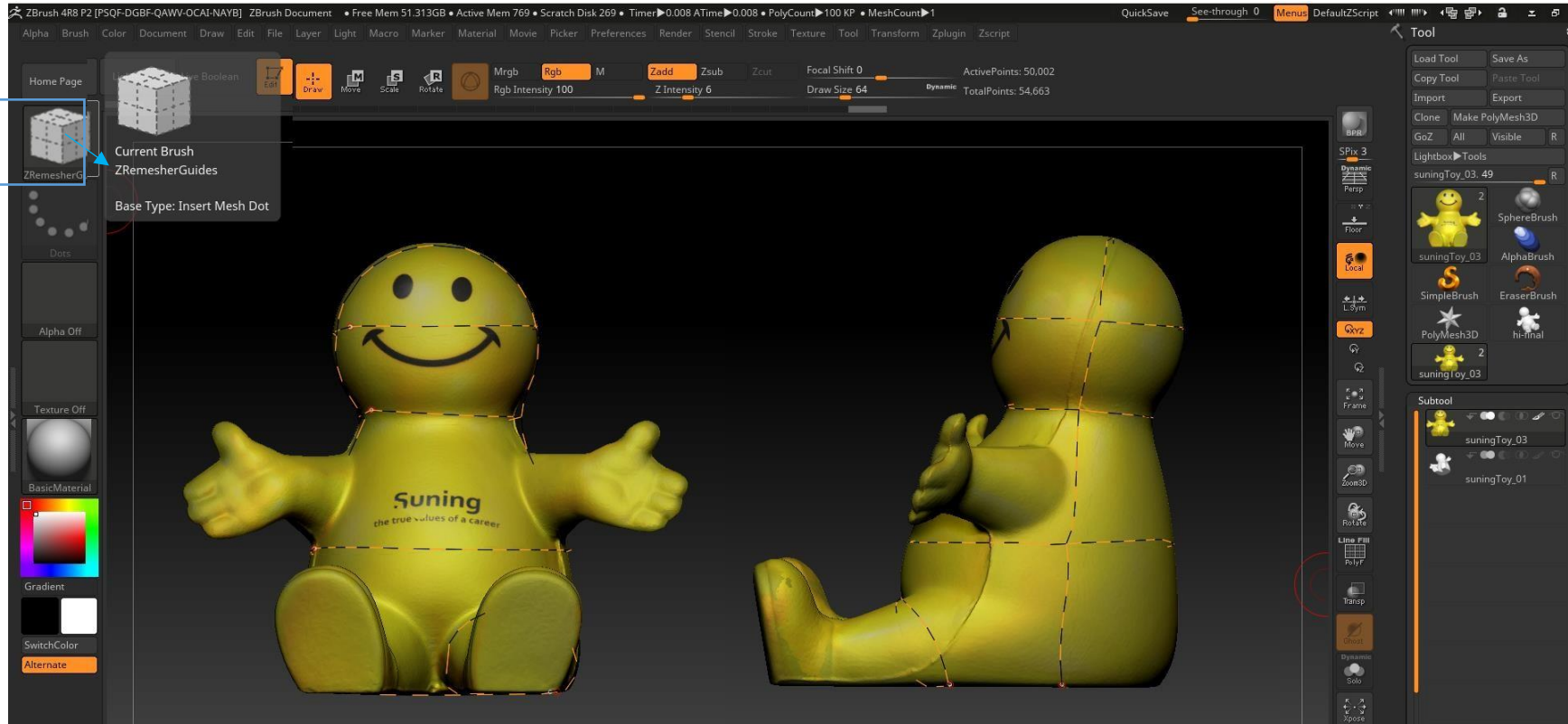
NOTE 注解:

Press **SHIFT + F** to see the **wireframe** (or click the **PolyF** button) ⚠ this model is too heavy now. The **Active Points** (or verts) will need to be reduced to around 4000 – 8000 depends on the model size (In this case, the model is small and simple, so probably can be reduced to ~4000)

RETOPOLOGY (ZRemesher)

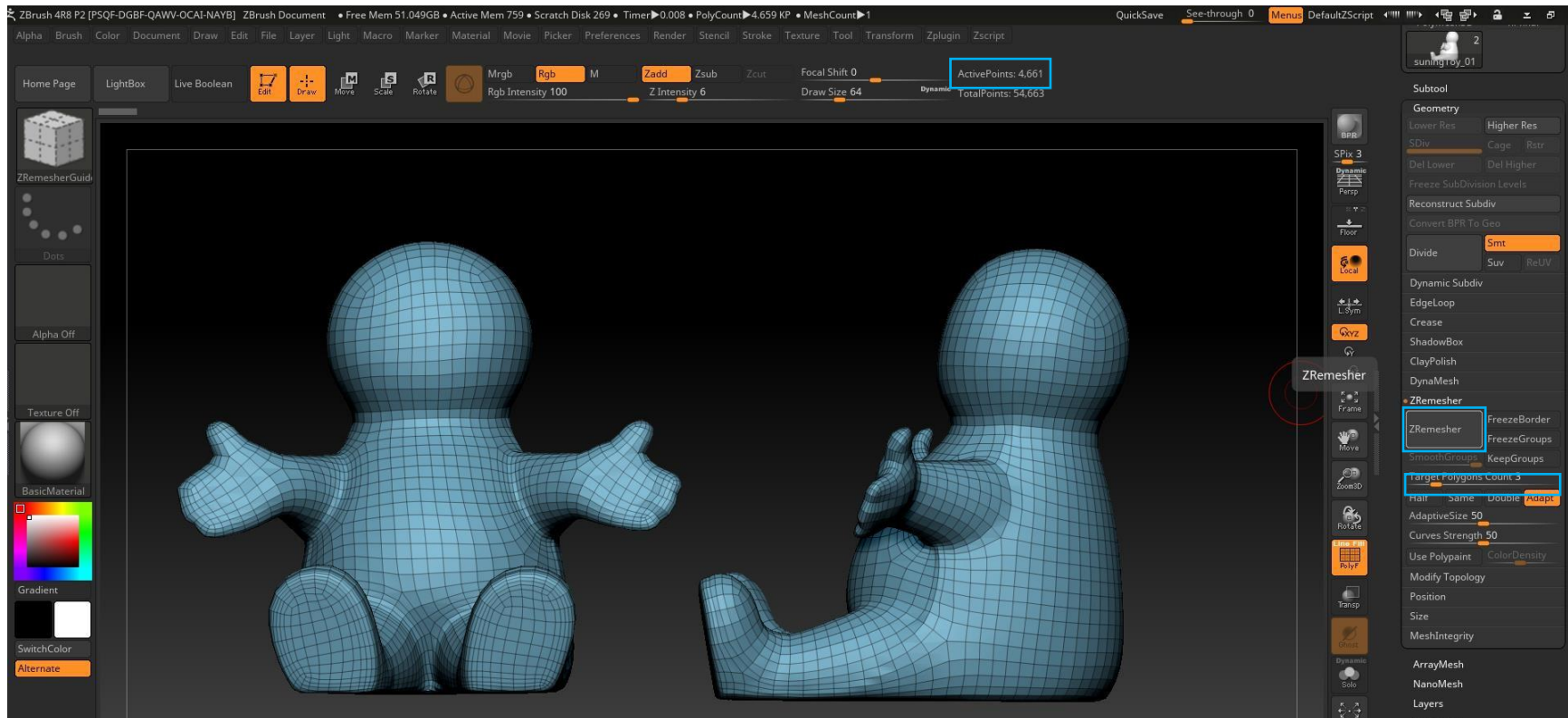
1. On the top left, click on the brush, change Standard to ZRemesherGuides (Shortcut: Open the brush selections and type “ZR”)

2. Roughly draw around the areas where you want the main edges to be (click and draw), make sure you connect the whole loop!



Note 注解:

This step helps define the “edgeloops” (or potential “UV seams”) when Zbrush generates the new topology (next step)



11. On the right menu, open up Geometry > **ZRemesher** > change **Target Polygons Count** to 3 > hit the **ZRemesher** button

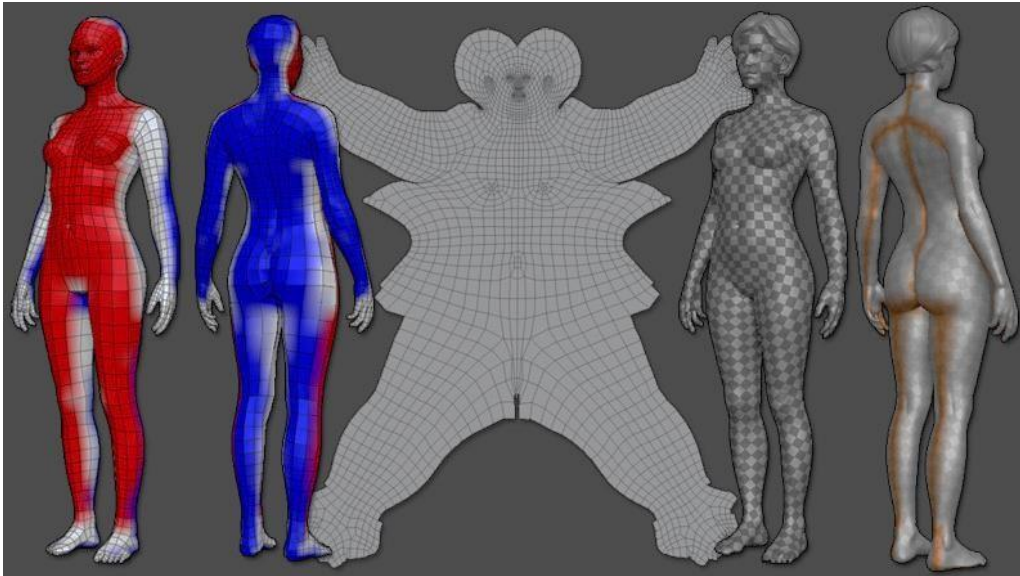
12. The model should now be converted into clean, fairly even quads. You can see now the **Active Points** is at 4,661!

UV (Zplugin: UV Master)

► METHOD #1: Control Painting

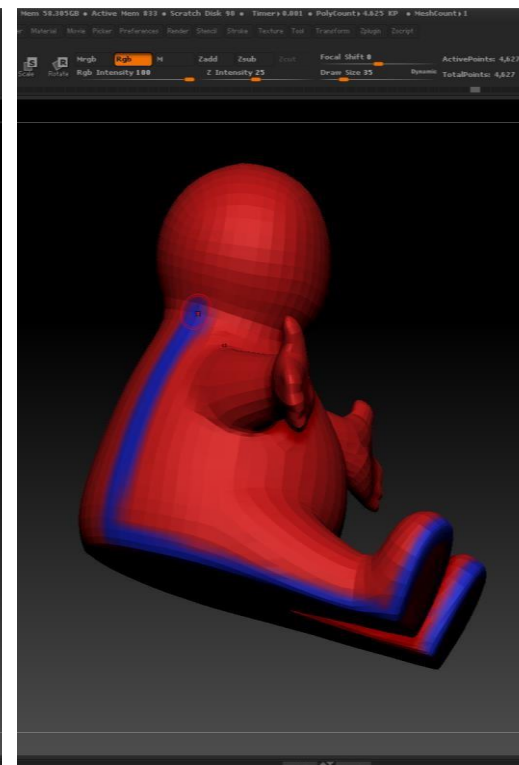
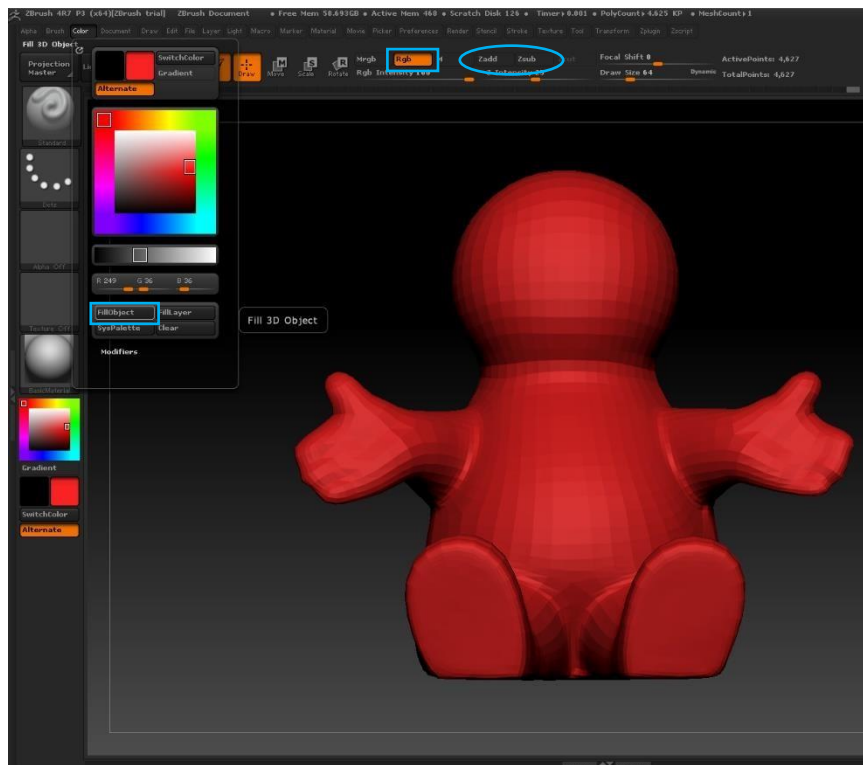
Note

- This method generates the UV map as 1 big map, and you will be using control painting to draw the seams (manual work).
- Compare to METHOD #2, it does require less work.
- Since it generates 1 big UV map, this method is more suitable for items that have mostly one or similar material (ex: purses, sofa...etc.)

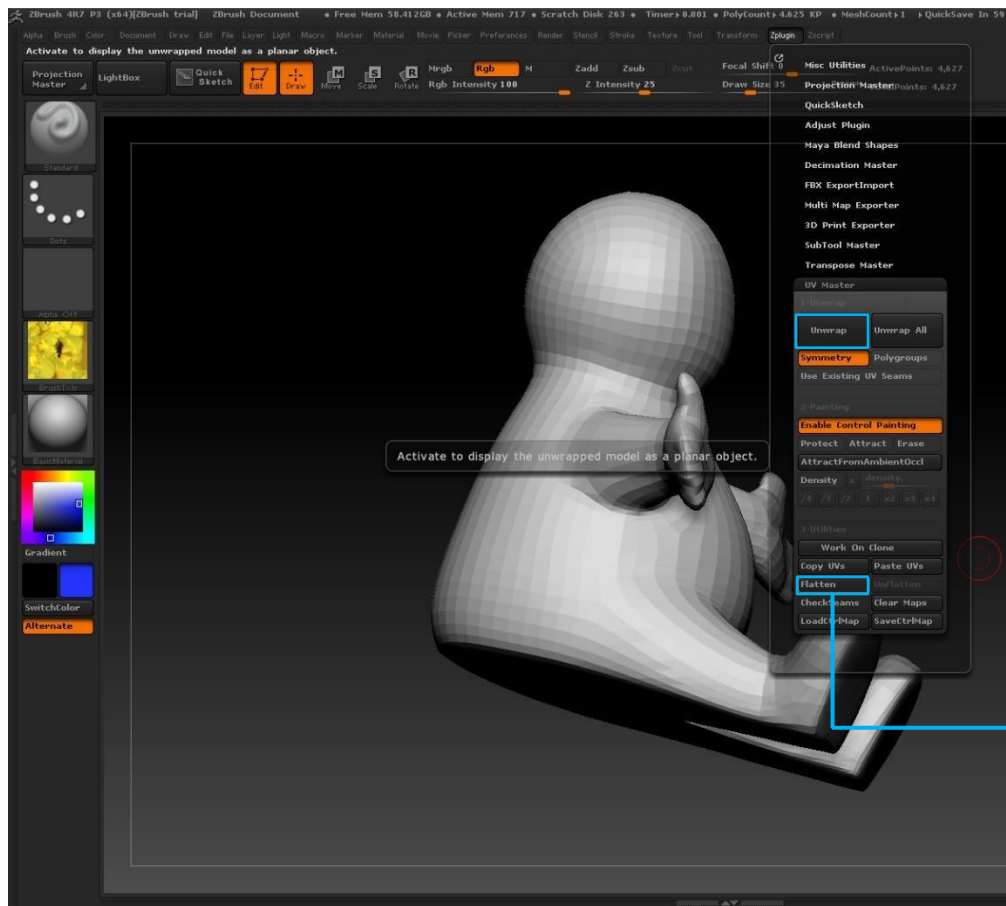


Example from Pixologic: ZBrush Artist – Eugene Folkin

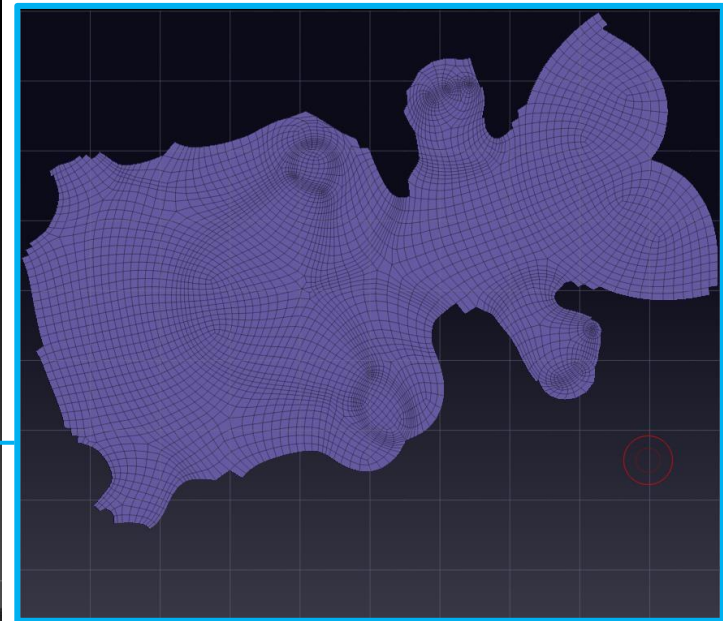
* Make sure the **PolyGroups/Wireframe Display** is turned off, click the **PolyF button** OR **SHIFT + F** to turn it off so you can see the paint!



1. On the top menu, go to **Color** > pick red > Click **FillObject** (This will fill the entire model to red: areas you don't want seams)
2. Enter **Draw Mode (Q)** if it's not on. **Turn off the Zadd** and **turn on Rgb**, then change the color to **blue**.
3. Draw on the geometry where you want the UV seams to be! Doesn't have to be perfect.



UV Master - Flatten View



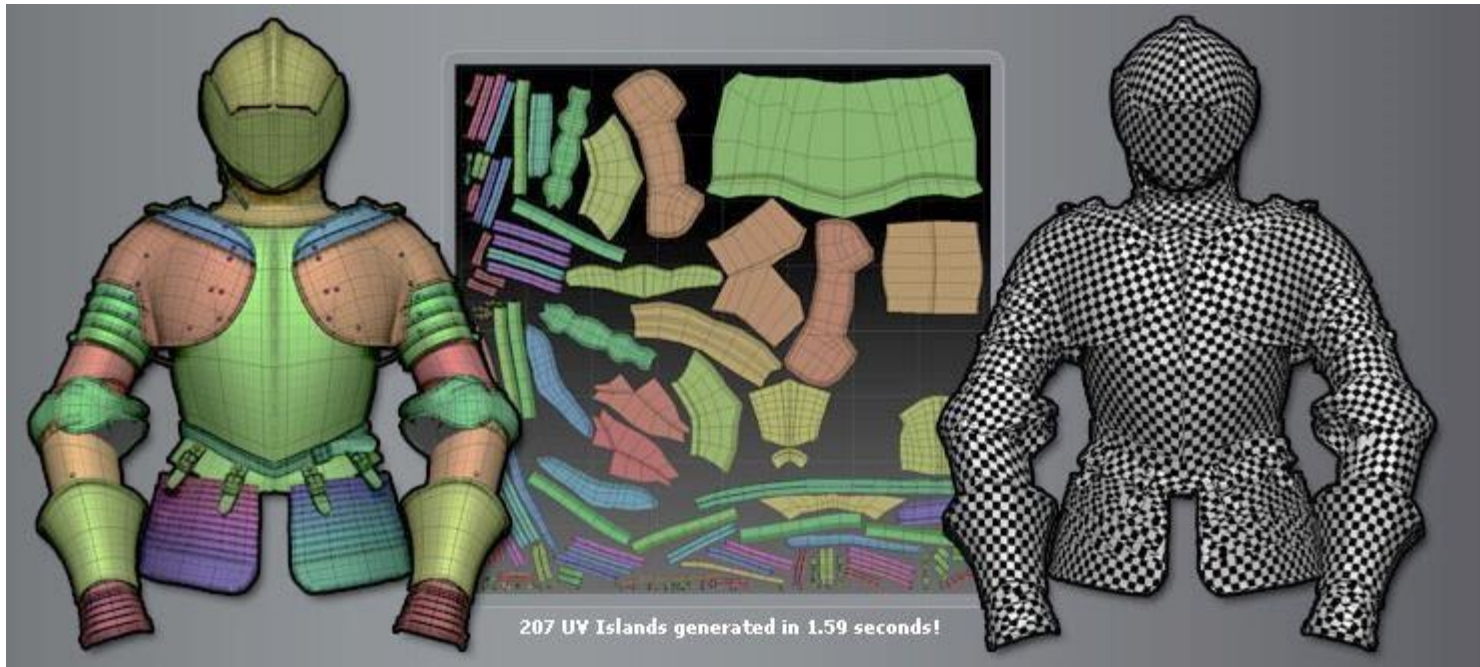
4. On the top menu, go to **Zplugin** > open up **UV Master** > Click **Enable Control Painting** *note, in this case, **symmetry** is turned on, but if your object is not symmetrical, leave it off! Then click **Unwrap** to generate the UV map!

5. After Zbrush finished generating the UVs, click **Flatten** to view the new UVs, then click **Unflatten** to return the 3D mesh view.

► METHOD #2: PolyGroups

Note

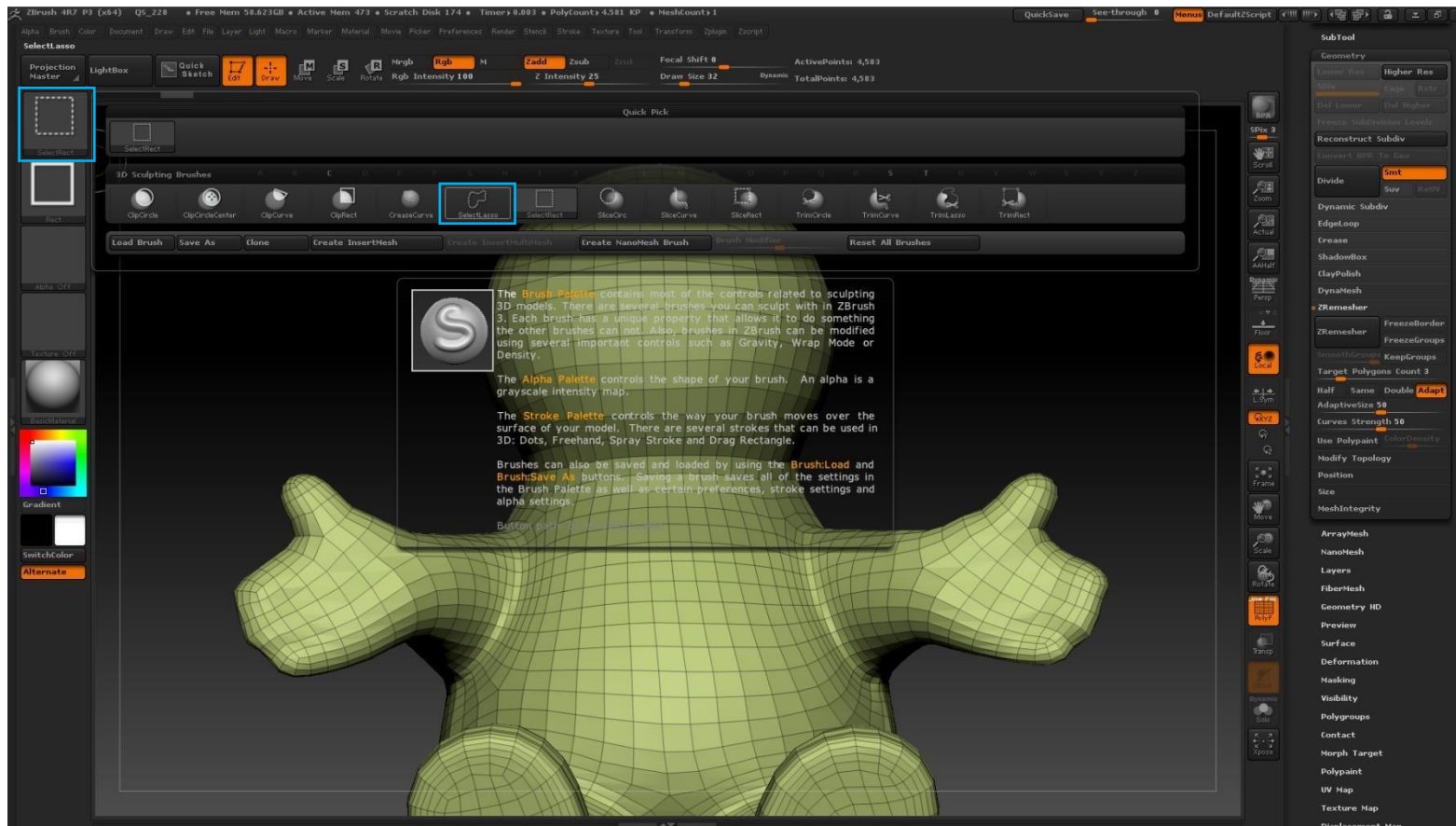
- This method generates the UV map based on the **PolyGroups** you create (in other words, each PolyGroup becomes a UV Shell)
- Compare to METHOD #1, it does require a bit more work. (You have to create the PolyGroups manually)
- Since it generates separate UV shells, this method is more suitable for items that have multiple material (ex: fridge, electronics...etc.)



Example from Pixologic – Zbrush Artist: Patrick Gagne

Tips: You can create PolyGroups using Select Tools, Masking, or Combining both. (Watch the tutorials for more information!)

► USING SELECT/HIDE



1. Hold **CTRL + SHIFT** to enter selection mode, then on the top left menu, change the **SelectRect > SelectLasso** or any select tool you prefer
 2. Use the **SelectLasso Tool** to select the area you want as a group (ex: head), then this should isolate the selection. Once you are done, press **CTRL + W** to create the a PolyGroup. Repeat until you are satisfied with the result.
- To deselect, hold **CTRL + SHIFT + ALT** to change to de-select mode.
 - To clear all selection, hold **CTRL + SHIFT** and click in empty space

- To hide specific PolyGroup, **CTRL + SHIFT** and click on that specific PolyGroup.

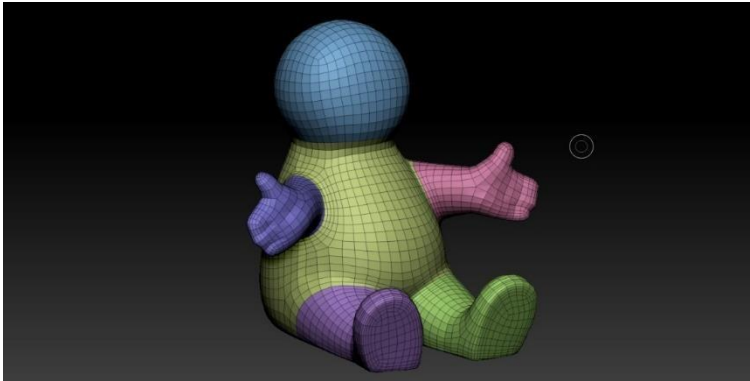
- ► USING MASKING

1. Hold **CTRL** and simply draw (paintbrush or lasso) on the areas you want to change to a PolyGroup (the selection should turn gray) Once you are done, press **CTRL + W** to create the a PolyGroup. Repeat until you are satisfied with the result.

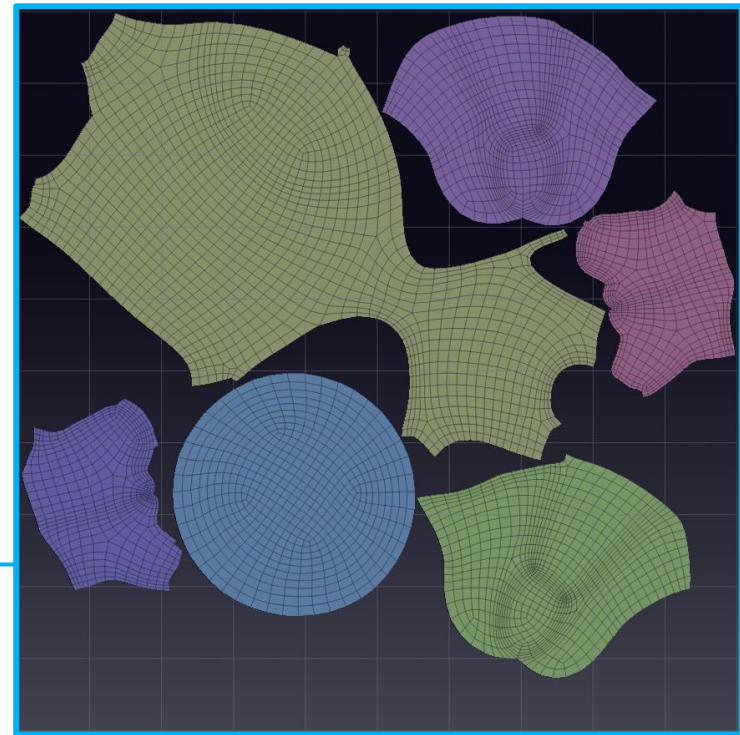
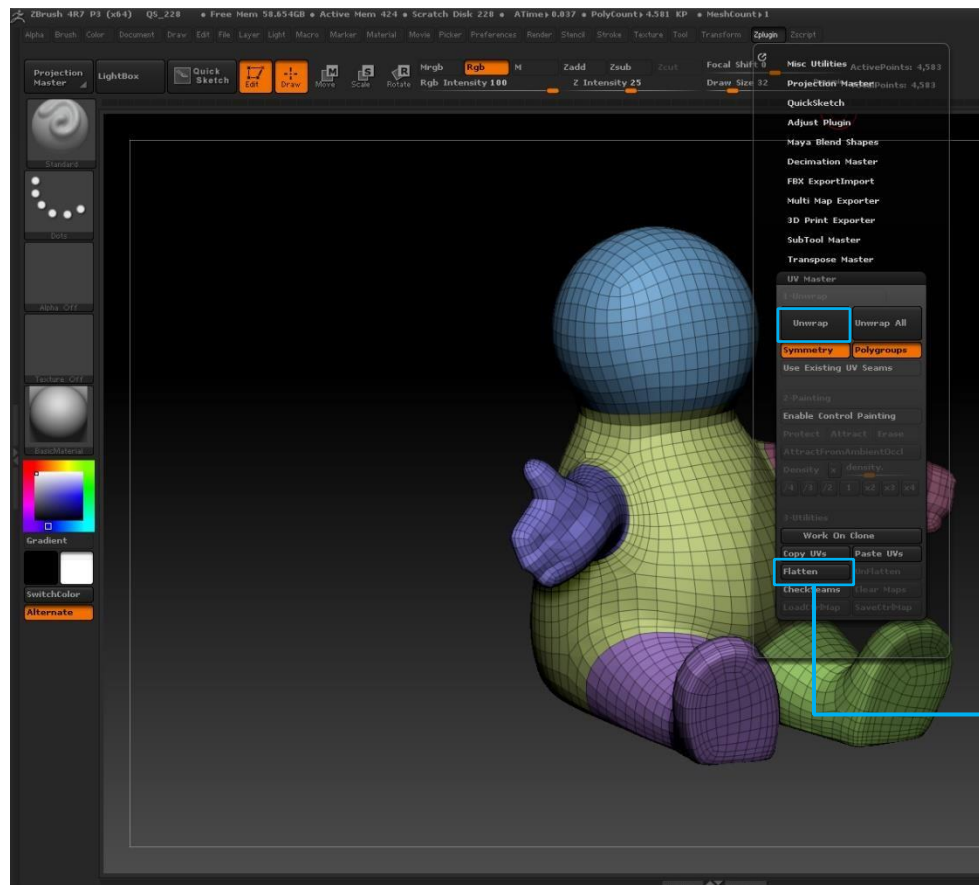
- To invert mask, hold CTRL + click in empty space to invert.

- To un-mask, hold CTRL + ALT to change to un-mask mode.

- To clear all mask, hold CTRL + click and drag in empty space.



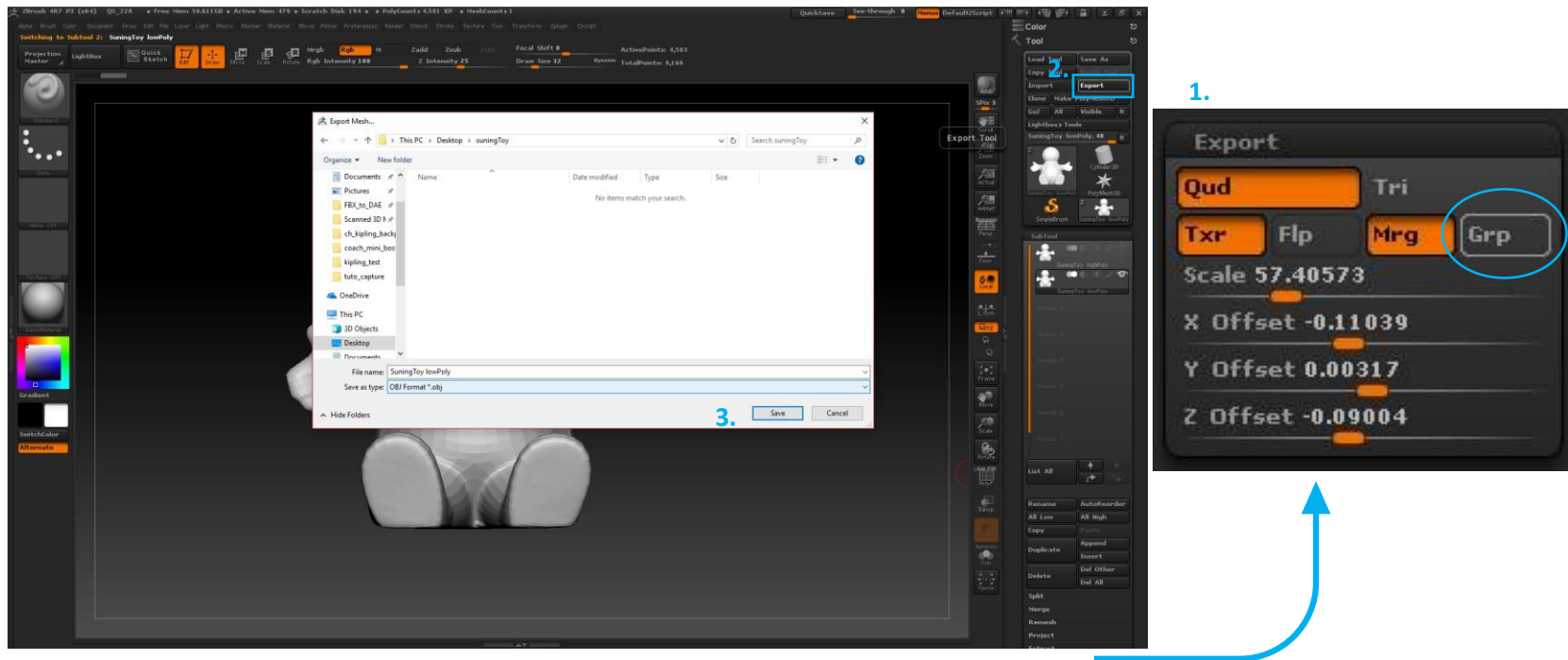
The final result with total of 5 PolyGroups



3. Like in **Method #1**, go to **Zplugin** > open up **UV Master** > Click **Polygroups** *note, in this case, **symmetry** is turned on, but if your object is not symmetrical, leave it off! Then click **Unwrap** to generate the UV map!
4. After Zbrush finished generating the UVs, click **Flatten** to view the new UVs, then click **Unflatten** to return the 3D mesh view.

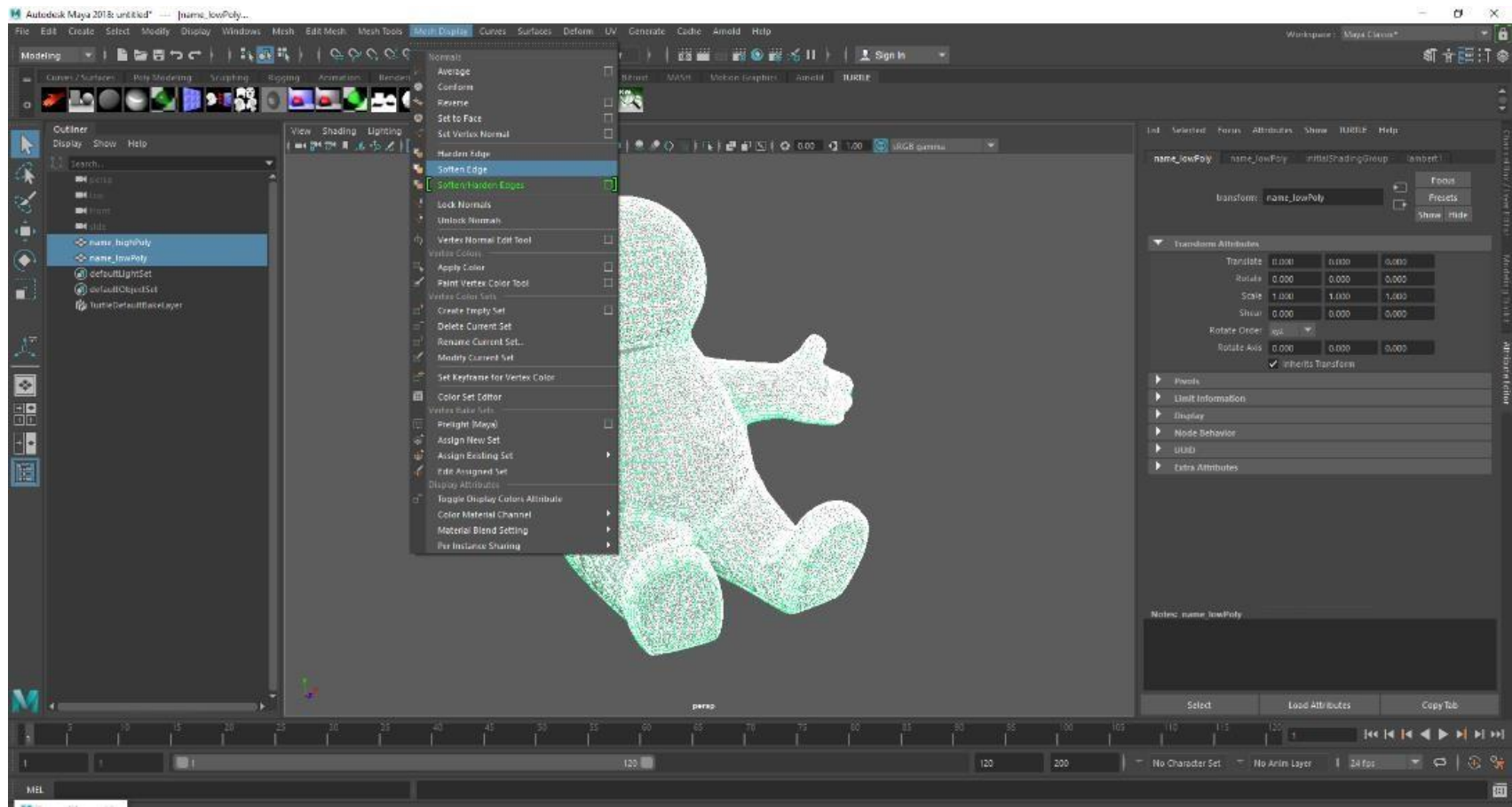
EXPORT

1. On the right, scroll all the way to the bottom and open up **Export** > make sure **Grp (Group)** is turned off, or else, when you import it into Maya, it will separate the geometry into several parts. (Note: You will need to turn Grp off everytime in a new project! Default is set as on!)
2. On the top right, click the **Export** button > Choose the directory (create a folder with the model's name) and save as an .obj
3. Remember, you will need to export BOTH **highPoly** and **lowPoly**! And probably name it something like *name_lowpoly*, *name_highpoly*

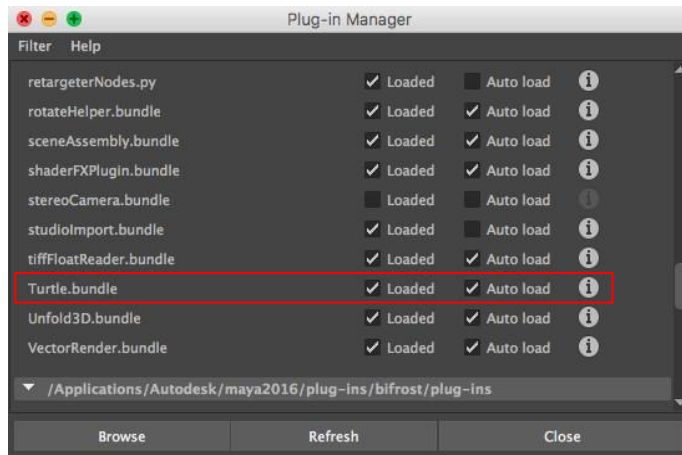


2. MAYA: Bake Textures Maps (TurtleBake) & Export

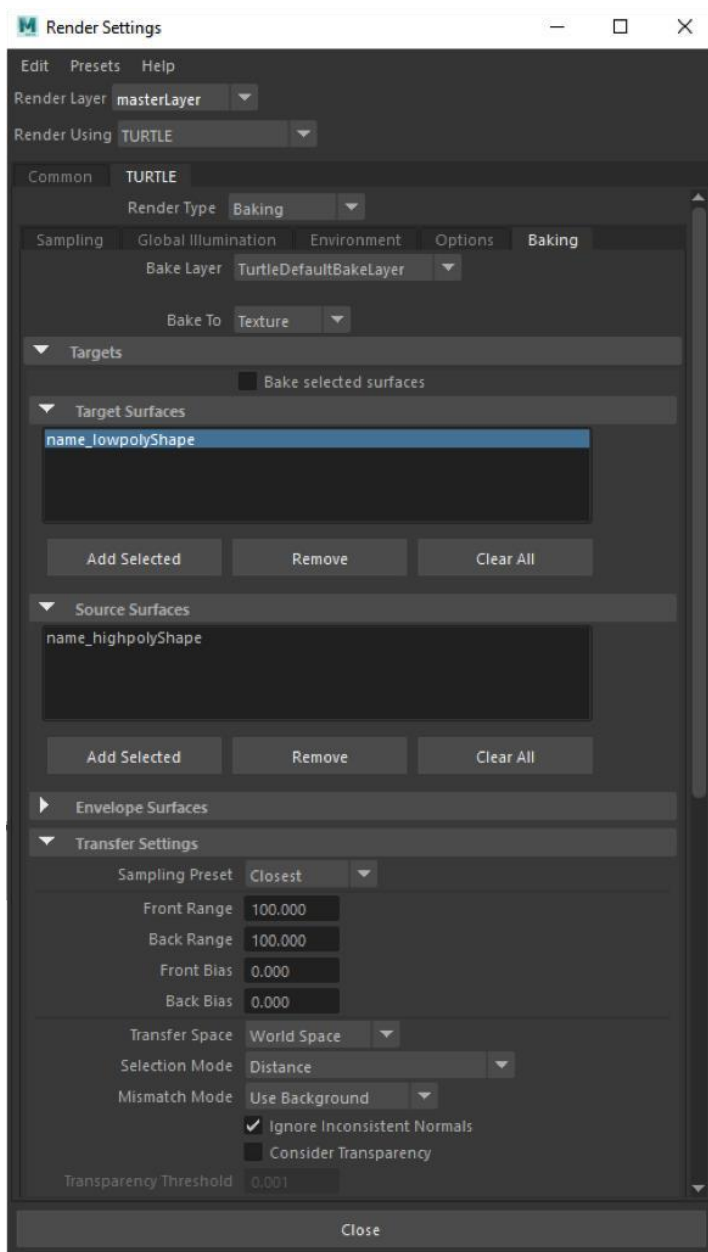
1. Import both the highpoly and lowpoly .obj you previously exported from Zbrush. (They should be in the same position)
2. Select both models, go to Mesh Display > Soften Edges (We need to soften the normals to avoid baking the sharp edges)



3. Open up **Plug-in Manager** (Windows > Settings/Preferences > Plug-in Manager), make sure Turtle.bundle is checked for Loaded & Auto load!

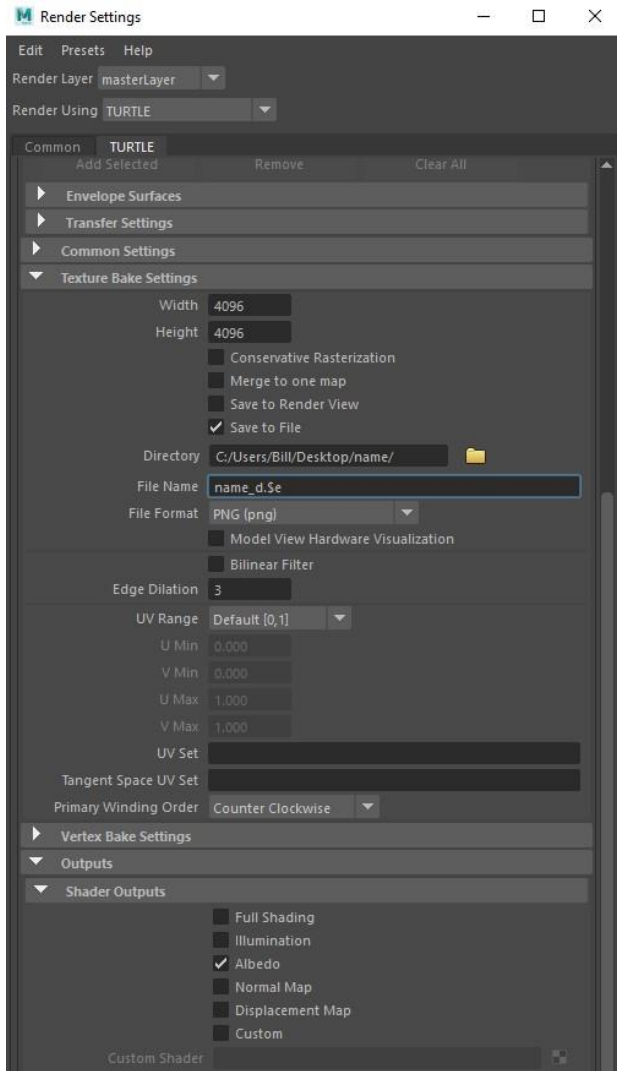


4. Open **Render Settings** , change **Render Using** to **TURTLE** & change **Render Type** from “Rendering” to “**Baking.**”
5. Go to the **Baking** tab, then open up **Targets**, you will see two panel boxes: Target Surfaces & Source Surfaces.
 - Target Surfaces means the object you want to map on, so select the lowPoly model and click “Add selected.”
 - Source Surfaces means the object you want to get informations from, so select the highPoly model and click “Add selected.”
8. Open up **Transfer Settings** and change the **Sampling Preset** to **Closest**. (see image below)

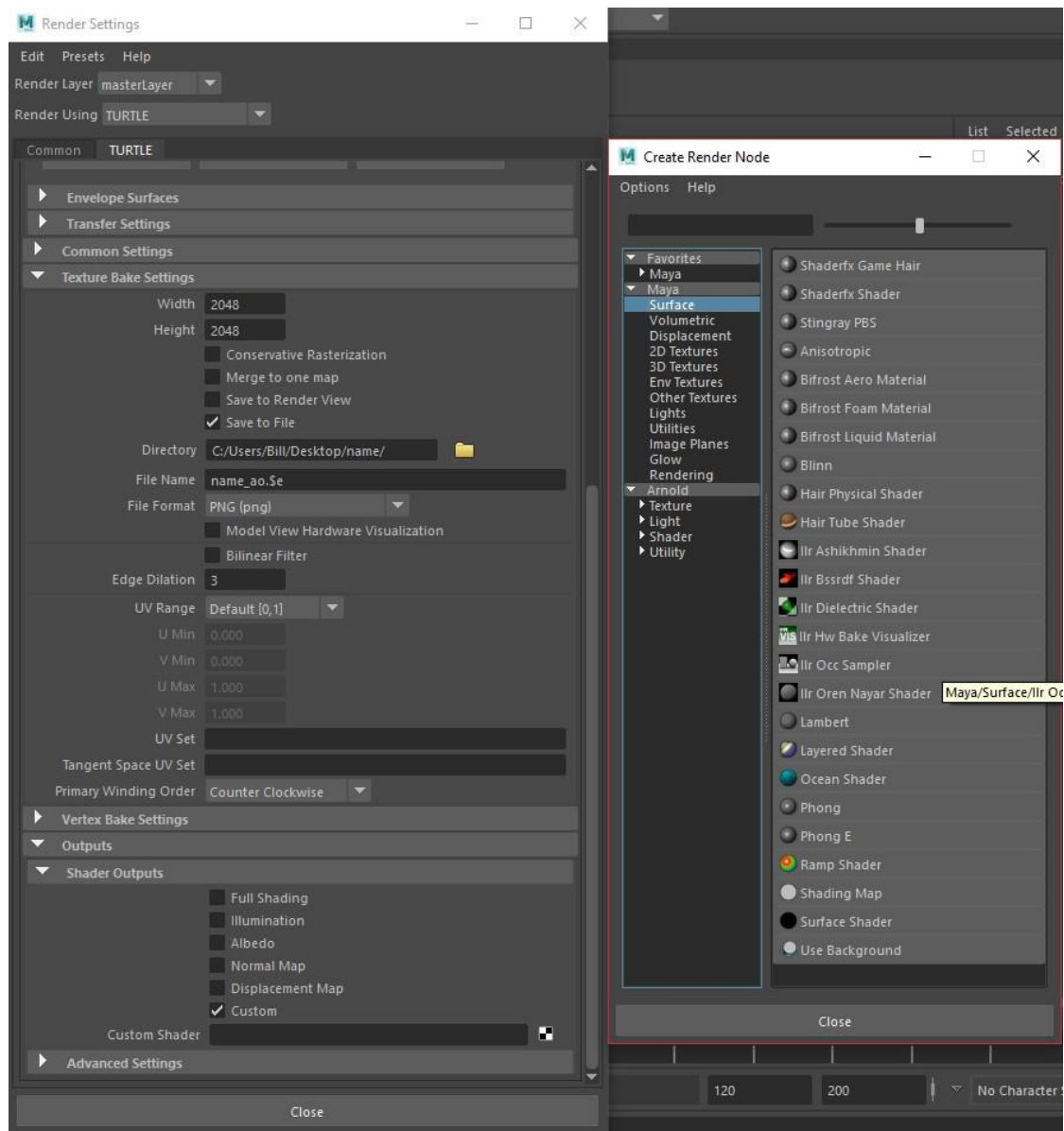


9. Scroll down and open up **Texture Baking Settings** and **Shader Output** and make the following changes, then hit **Render**  for each map:

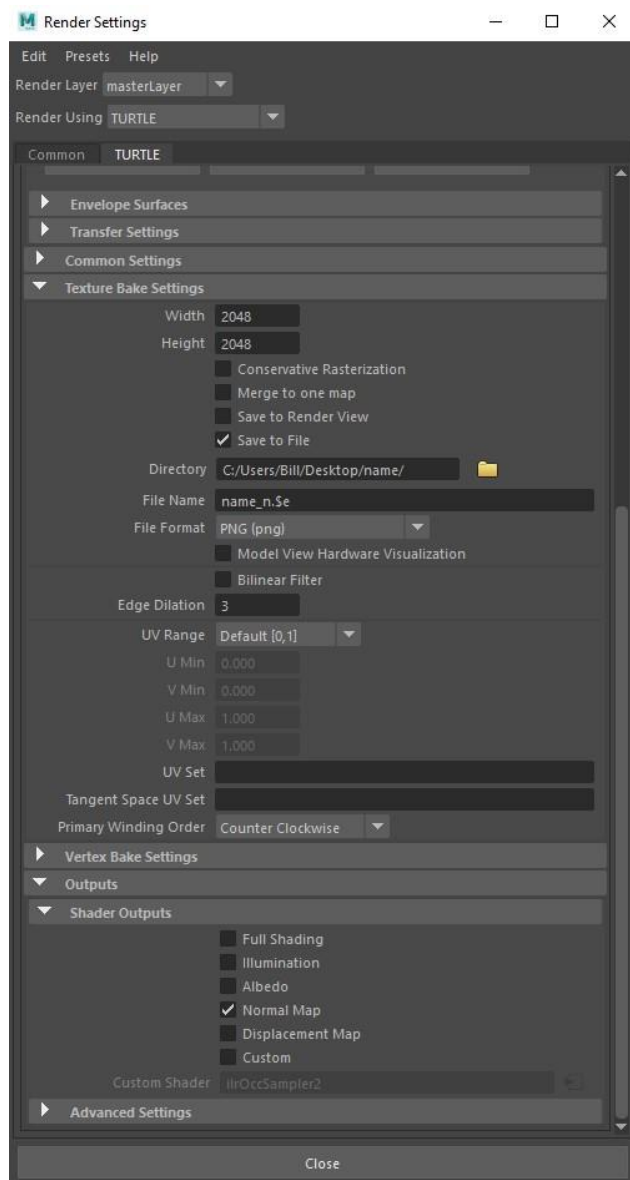
- **ALBEDO/Diffuse (_d):**



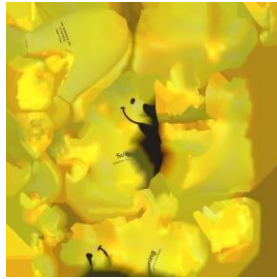
- **Ambient Occlusion/AO (_ao):**



- Normal Map – Optional (_n):



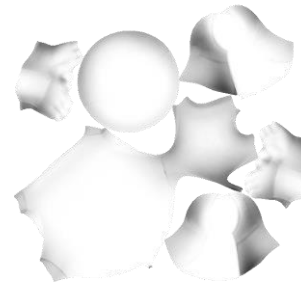
10. Below are final results of the baked maps:



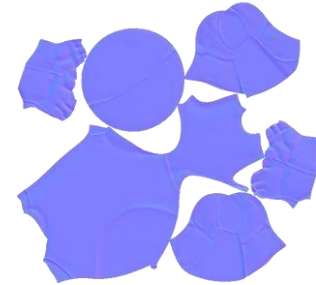
Original Texture



New Diffuse



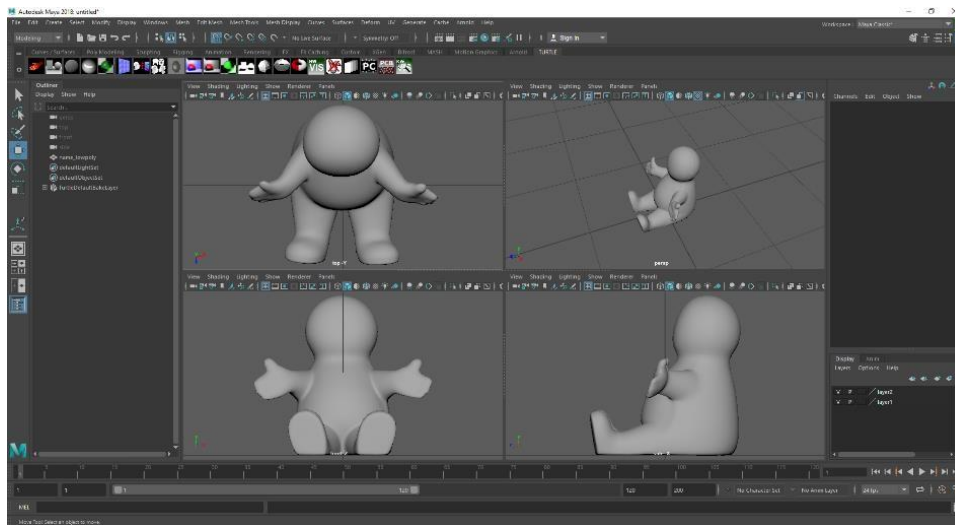
AO



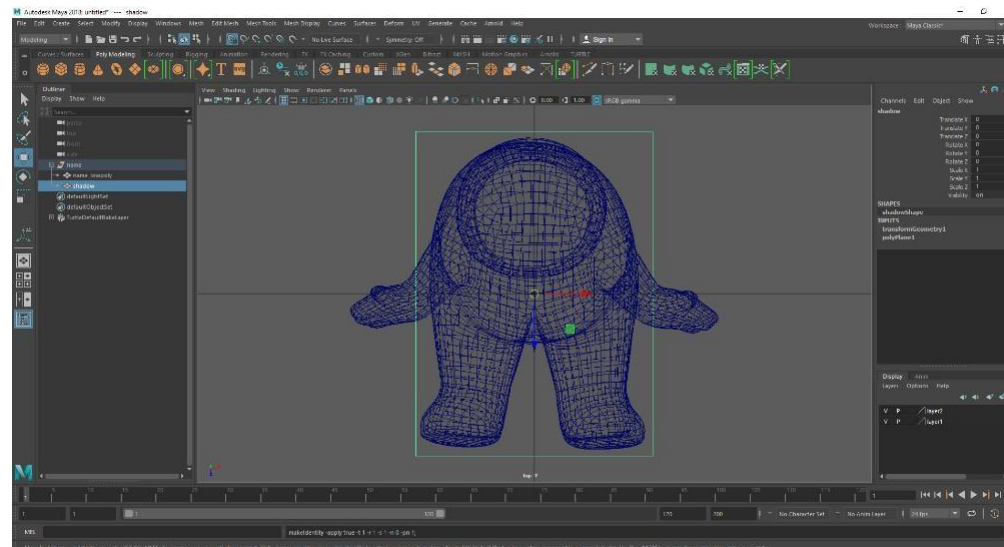
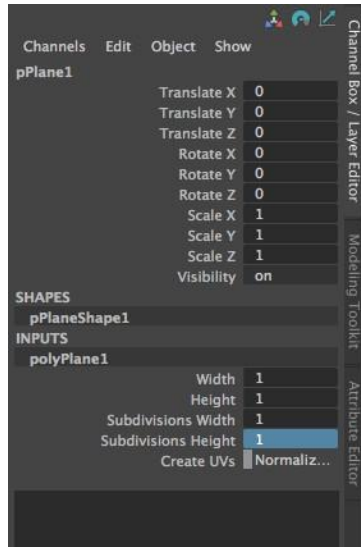
Normal (optional)

Common Errors: 常見問題

- If the map shows weird white triangles at the edges, that means you forgot to un-check the Bilinear Filter under Texture Bake Settings
 - If you cannot open the saved map file, it means you did not put .Se (selected extension) in the end of the name, simply add .png in the name!
 - If your baked maps appear to show weird extra discolored parts, that means you forgot to change the **Sampling Preset** to **Closest**. (Step 8)
- * This happens when the lowpoly and highpoly models aren't exactly the same shape. By setting it to "Closest," the software bakes the map based on the closest points rather than the exact points!
11. Once you have successfully baked all necessary maps, you can hide/delete the highpoly model now.
 12. The lowpoly now is the final model! Re-position it so it is straight and centered, then change the pivot to the center bottom of the model and make sure it is located at the center of the grid, then "Freeze Transform" (Modify > Freeze Transform)



13. Create a **plane**, in **Channel Editor**, open **INPUTS** and change both the Subdivisions Width & Height to 1 and name it “shadow”. Then go to top view and scale the plane so it is only slightly bigger than the object (Take a snapshot of the top view for creating shadow later in Photoshop)



14. Go to **File > Export**, and in the export setting, open up **Advanced Settings > Unit Conversions**, select convert to “**meter**” (scale factor: .01)

15. Create a new folder and name it the same name as the group name! Export as .fbx and .dae (FBX_DAE) and save in the folder.

3. Photoshop: Fix/Enhance Texture Maps

1. Open the texture maps in Photoshop and fix any problems with Stamp tool, brush, color correction...etc.

2. Below is a before and after example on the texture map:

3. Once you've all finished fixing the maps, save a copy of the high resolutions of the maps (diffuse = 4K, AO and Normal = 2K) , then open **Image Size** and change all maps to **1K** (1024 x 1024) and save as .jpg. * Always save a copy of the high-resolution version!

4. Lastly, create the shadow texture: Open the top view snapshot (Step 13) in Photoshop, select the outline of the object /where the shadow would be, and go to Select > **Feather: 20pt**, then use the **Fill** tool (G): **Black**, set opacity to **60%**, and Click the selection **2 times**.