In this tutorial I will show how to set up a stylized 3D blueprint for Sketchfab. Although I used Blender to make this asset, the options that will be used to make the setup are available in every major modeling software.

Start out with an existing mesh. We'll create a copy of that mesh and modify it to achieve the outline cell shading effect. To do this, duplicate your mesh and put it to the side. Make sure you have a way to place it back at the original position when you are done! (i.e. move a certain distance or put a reference object there as shown in Fig. 1) Now, scale the mesh along its own normals (blender [Alt]+[S]) so that it is about 1.07 times it's original size. The scaled mesh (bottom) is shown to the side of the original model (top):
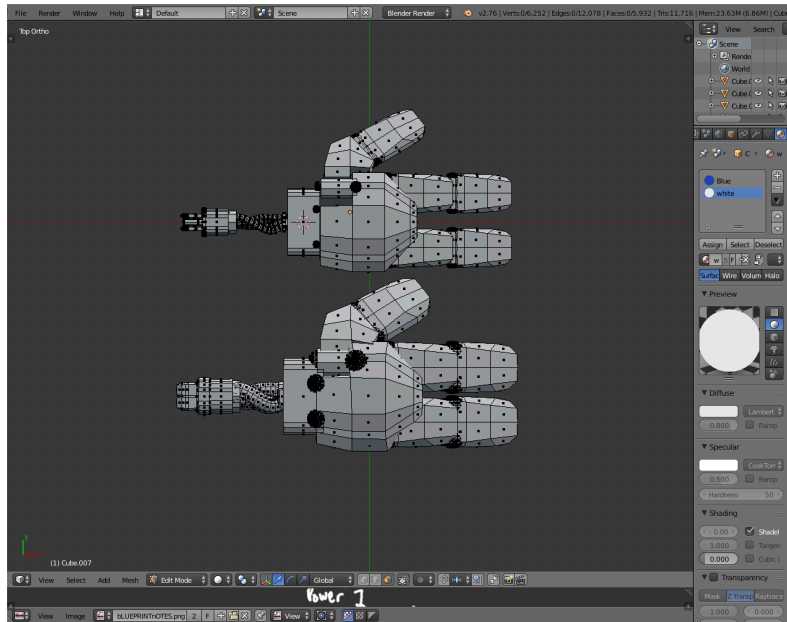

Fig 1: Positions of original and scaled mesh

We will use [backface-culling](https://en.wikipedia.org/wiki/Back-face_culling) to create the rendered border around the object to act as chalk lines. Since this option is dependant on the face normals, we will have to invert them on the large mesh. Flip the normals (blender *Tools>Shading and UV's> Normals> Flip direction*). The normals are flipped (in Fig. 2, the blue line shows the normal direction, and it faces toward the inside of the mesh):
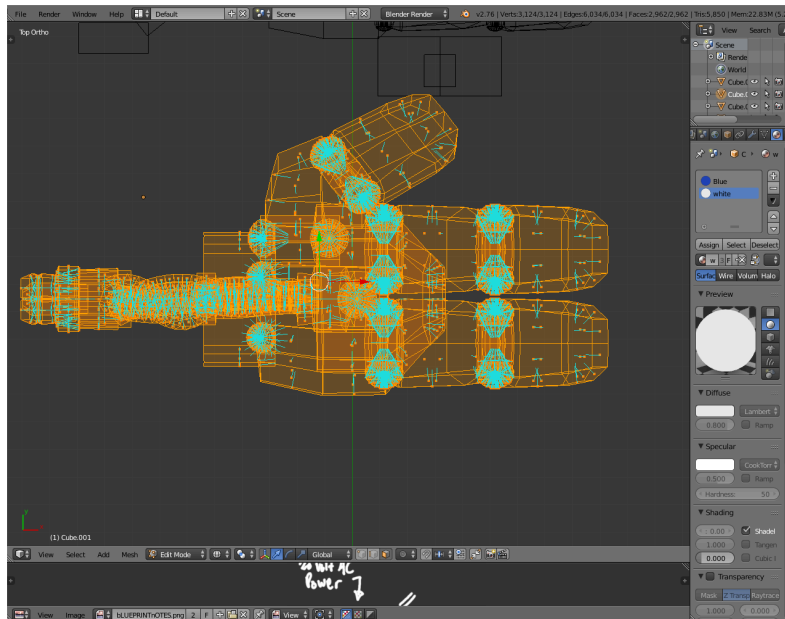
Fig. 2: Mesh normals are flipped

Now you must give the two meshes a color. The large mesh needs to be pure white (#FFFFFF), and the original mesh should be a blue-ish color (#0033CC). Once the meshes are colored, place the white mesh back at the same position as the blue mesh. Now is also a good time to duplicate both meshes and put the new copy in profile to the top of the camera. The mesh is colored, as shown in Fig. 3:
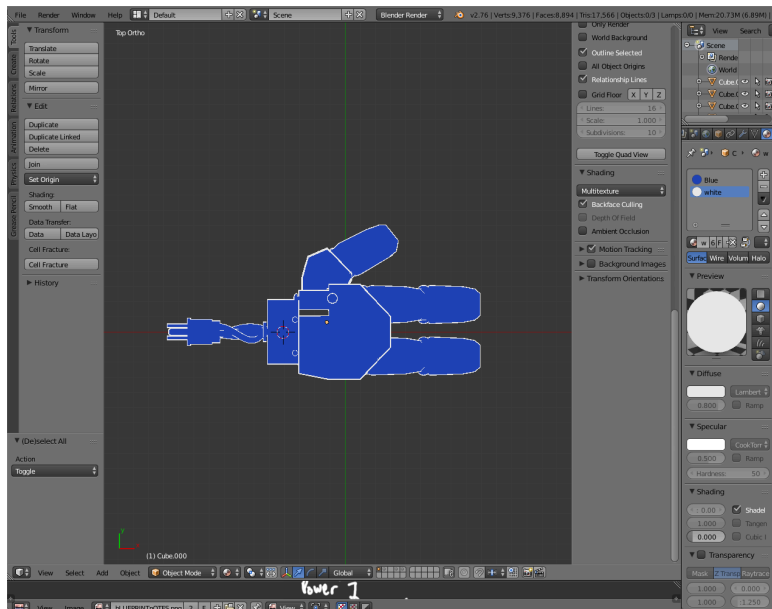

Fig. 3: Coloring of mesh

Now, the next part of the blueprint process is to add annotations, which are easy to do in Sketchfab, (https://help.sketchfab.com/hc/en-us/articles/202512456-Annotations.) But if you really want your model to look like a blueprint, you must create some handwritten ones to place around your scene (the messier your writing, the better :-)). This is easiest to perform with a drawing tablet, but if you do not have one, it is still possible using the mouse. If you don't have a mouse, go buy one.

The area around the annotation text you're making needs to be transparent, so create a new image in GIMP or Photoshop and fill it with transparency. The image will be transparent, per the settings shown in Figure 4 for GiMP:
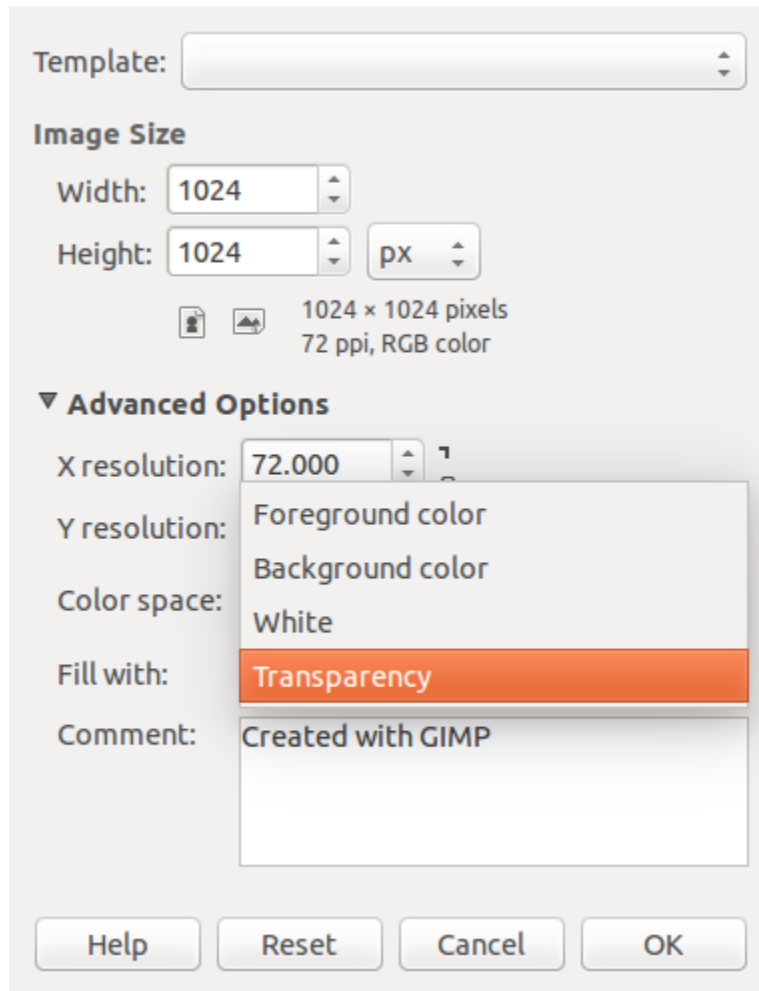

Fig 4.: Creating a transparent image

Now you can draw whatever you like on the image using a white brush. Try adding variation when creating the image so you don't have too many obviously repeating annotations when you add them to your scene. Numbers and comments that make no sense at all, like the ones in Fig 5, will add realism to the blueprint. Next, export your image as PNG, import it into your modeling software, and UV unwrap several planes and map them to the image. If you scale the planes at all, just try to keep all the text the same size and resolution still. Place the planes around your scene. The planes are placed, they are mapped to the image, and the have transparency, as shown in Fig 5:
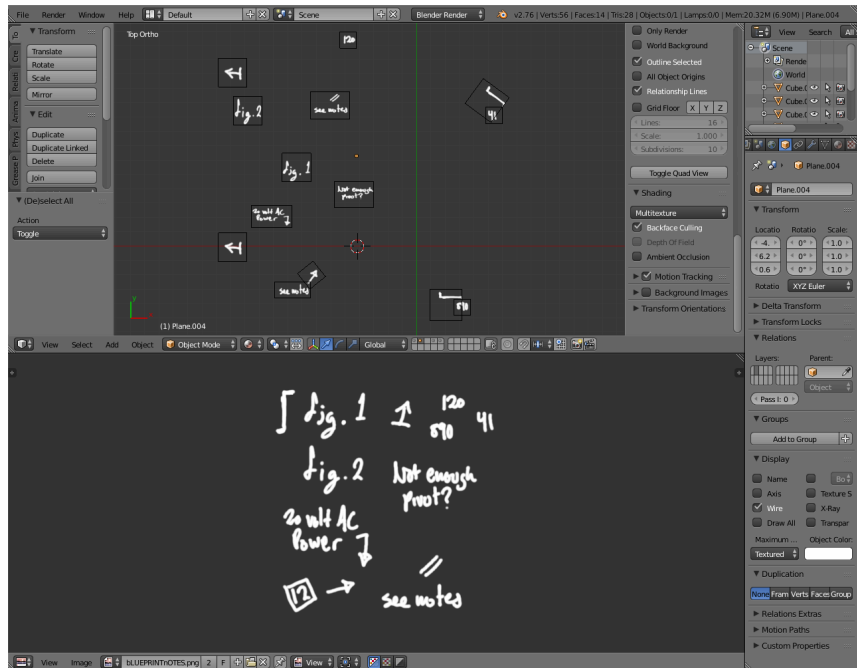
Fig. 5: Transparent annotations in scene

All that is left to do is add a background to your scene and import the model into Sketchfab. A simple box will work for the background. Make sure you scale it so it can engulf the entire model and have some room inside for the camera. Now color the box the same as the blue object. The box is colored the same, as shown in Fig 6:
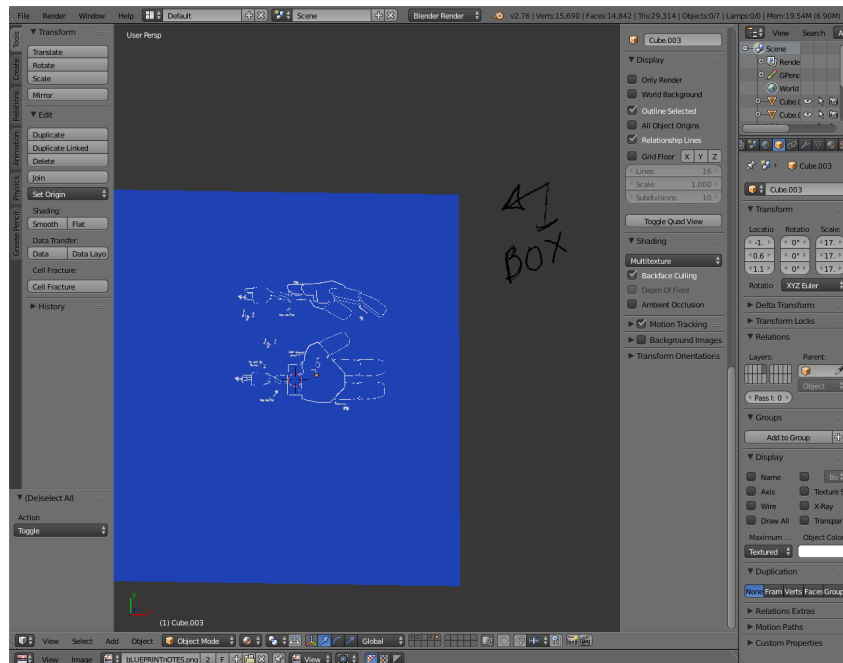
Fig. 6: Example of background box

Now you are ready to import the model into Sketchfab. After the upload finishes, go to "Edit 3D Settings" to change the way the model will appear in the viewer. The first tab to edit is "Scene" depicted by a little gear icon. You must now enable "Shadeless" under the shading drop down menu, and "Wireframe". Only a very light amount of wireframe is needed. You can also give your model any filters you want, but the essentials are "Grain" (animated or still, your preference) and "Sharpness" which will make the blueprint look more like paper. The Filters are set, shadeless and wireframe are enabled, with sample values shown in Fig 7:
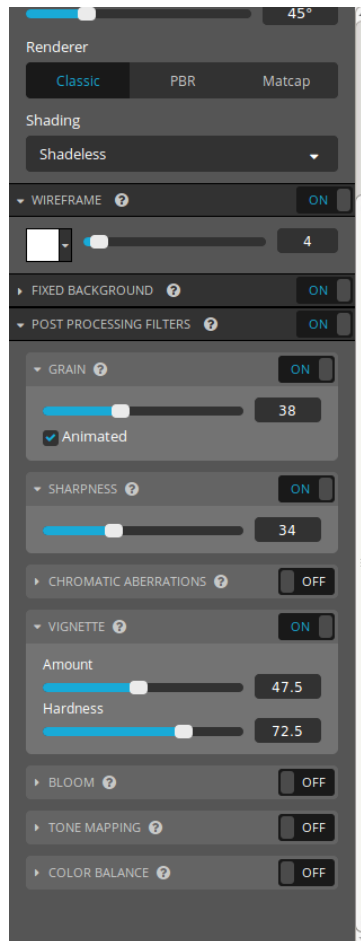

Fig 7: Render settings for scene

Now you can probably see the model inside the box, but it will look white, as backface culling has not been activated for your white material. You can do this under the "Materials" tab depicted by a mountain landscape with a sun above it. Under the "Faces Rendering" menu, select "Single Sided" for the white, and "double sided" for the blue. Backface culling is set, as shown in Fig 8:
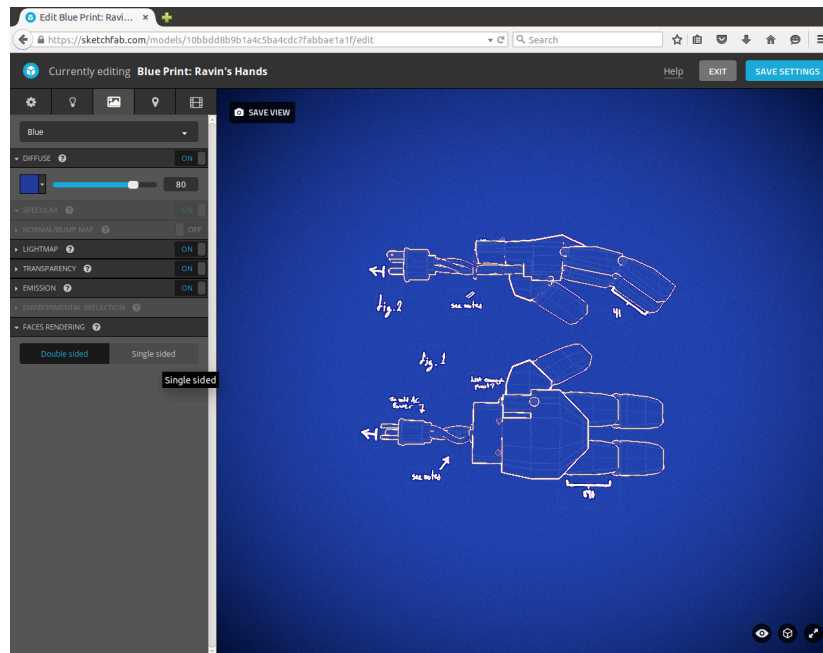
Fig 8: Backface culling set

The final step is to enable the transparency for that annotation image. If you imported the model as .zip or .rar, then this might be done for you, otherwise, open up the the annotations material and import the image. Mapping the image will be done for you. Enable transparency for the material, and select the annotation image as the mask. The image is enabled, as shown in Fig 9:
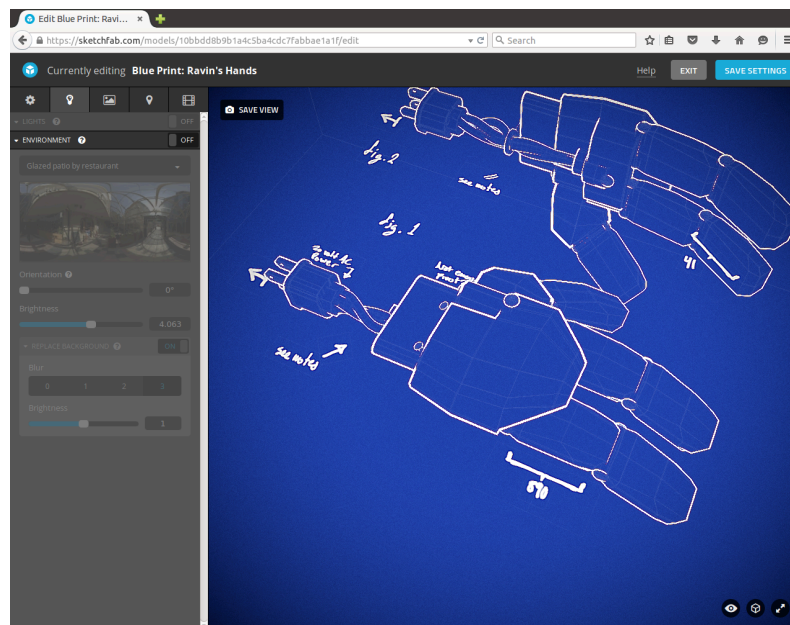

Fig 9: Annotations looking good! :-)

Now your model is ready to be shared with the universe! Make sure you give it *#Blueprint* so I can find it. Save settings and publish the scene.

https://sketchfab.com/models/10bbdd8b9b1a4c5ba4cdc7fabbae1a1f