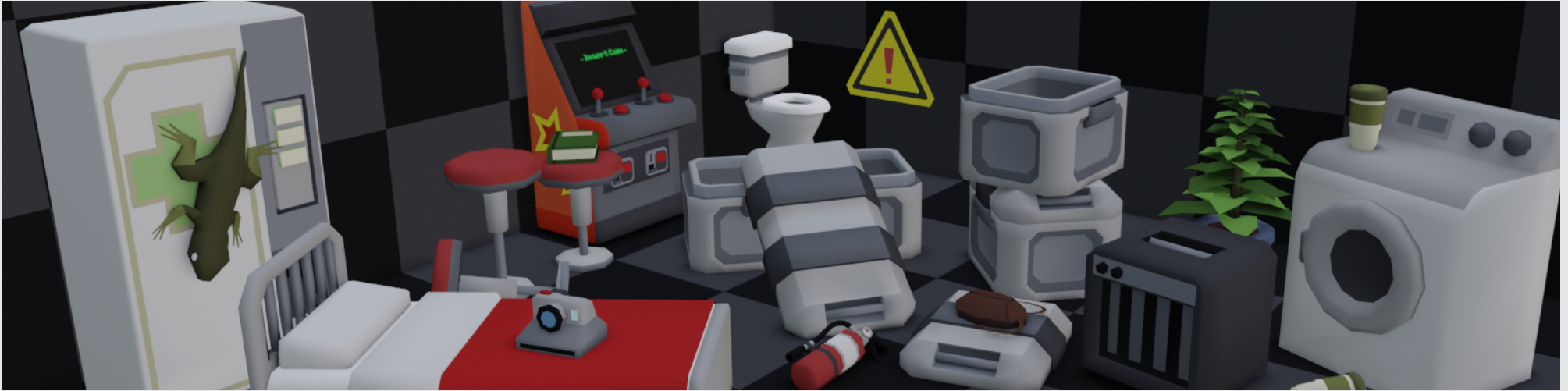# SS3D Model Formatting Guide

Info

This guide is built with the intent to allow model submissions to come in to the hands of developers as close to usable as possible, so that minimal cleanup or edits are required, and as such, a finished, accepted model needs to meet the criteria listed in the following pages. Following the bullet points alone is acceptable, but if you need to understand more about a given factor, notes are provided for each point along the way.

Outward normals

Detail

A "normal" is the direction the face of a model is pointed. In the images to the right, the normals are represented by the blue lines. To save processing power, software like Unity will only render the "normal" side of the face. This process is called "**backface culling.**"

By default in Blender, backface culling is turned off, so it will render both the front (normal) and backside of each individual face. This commonly results in models that have faces with inverted normals, since, to the modeler, the faces appear to be all the same. This can be prevented by enabling backface culling in Blender. **As of Blender 2.8, backface culling can be found in the material settings** while in LookDev view.

The template in the SS3D modeler's kit has backface culling enabled by default for all present materials. Hopefully taking this step and allowing backface culling should allow modelers to keep better track of the normals.

Keep these fundamentals in mind when modeling flat objects like paper, as they will need to be double-sided.
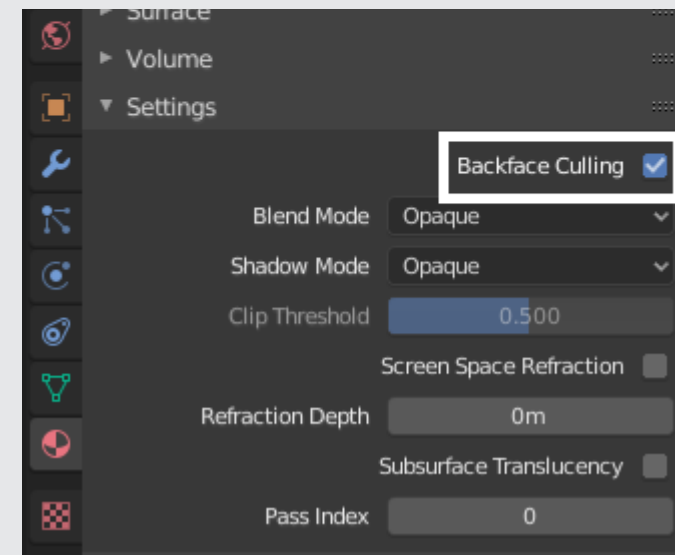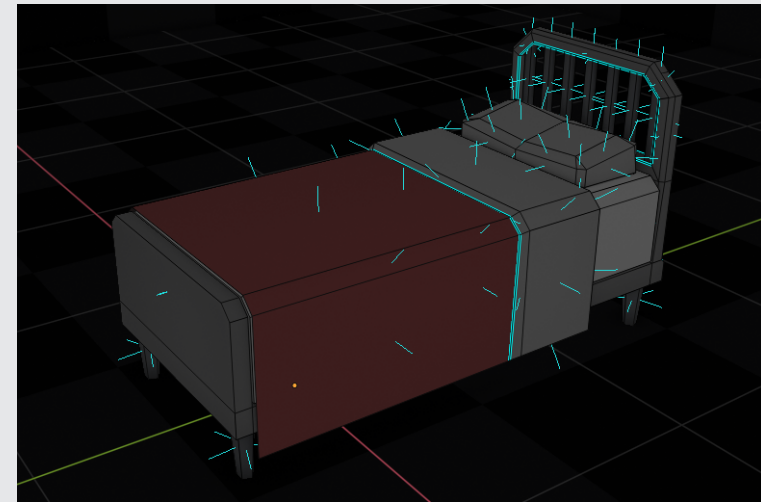
Location of "Backface Culling" in the materials tab.

Smooth shading

Detail

    This is touched on in the *SS3D Style Guide*, but it still bears repeating since it's so often overlooked. People often associate low poly art with flat-shaded surfaces, but this is not the case with SS3D! Models in SS3D all have a smooth-shaded appearance, which helps a great deal in getting that soft, almost pastel-like appearance.

    Surfaces in Blender 2.8 can be shaded smooth all at once by entering object mode, selecting your target, and clicking *Shade Smooth* from the "object" dropdown at the top of the layout. If a sharp edge is desired, you can mark an edge sharp by selecting the edge in edit mode, and clicking *Mark Sharp* from the edges menu at the top of the layout. Sharpness can also be removed in a similar way, but instead, selecting *Clear Sharp* from the same dropdown. For best smoothness, try to model using only quads (four-sided polygons).

    An additional thing to note is that the materials don't use specular highlights, so if you're setting up your own material, **turn specular down to 0.**

Note: Look into "ambient occlusion" for the shadows in crevices.

Named materials

Detail

     When exporting a file to .FBX, the model will not preserve its textures. Instead, the materials will be applied in Unity, so it's important that the material is named something the programmers can recognize.

     If you are using palette05, then the material should be named "palette05". Even if the material uses no texture, the material should still be named appropriately. Like "glass" for a glass material, or "emissive white" for an emissive white material. I feel like this topic is very straight-forward, but it's easy to gloss over.


Example of named materials.
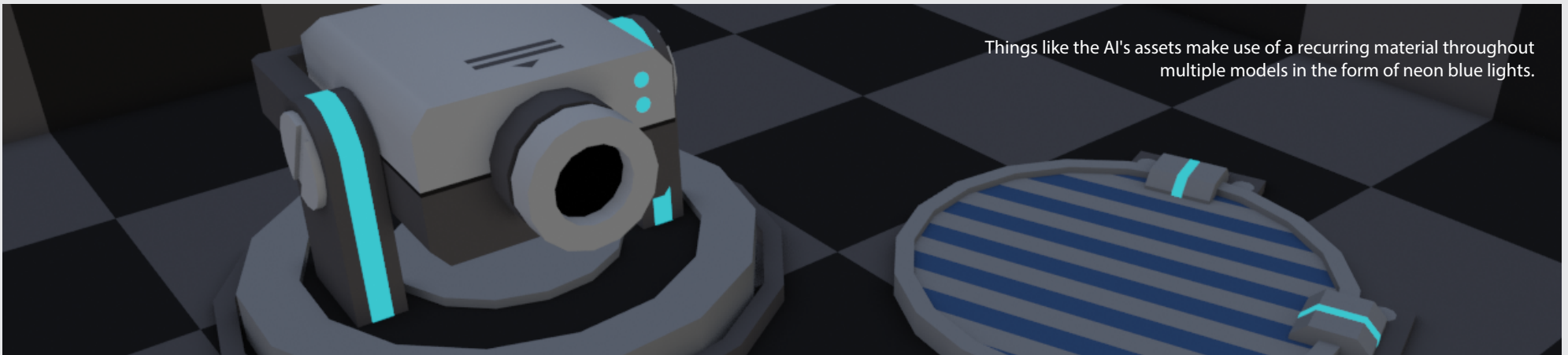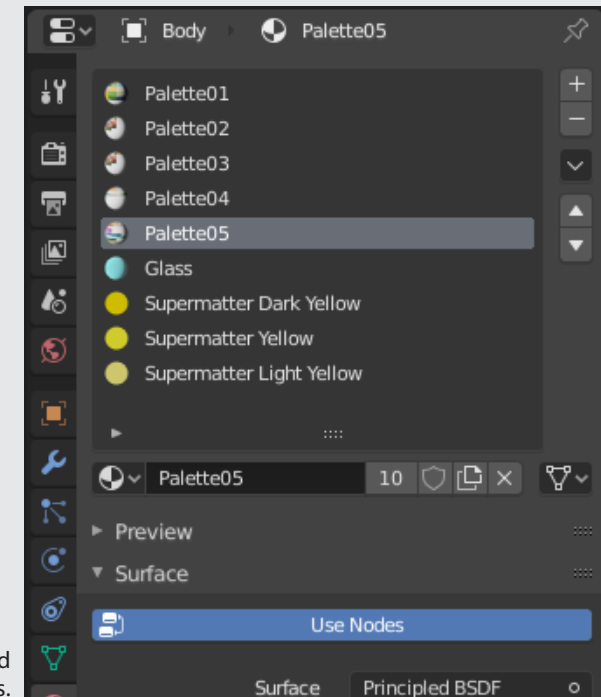
Things like the AI's assets make use of a recurring material throughout multiple models in the form of neon blue lights.

Sizing

Detail

     If you are using the template provided in the **SS3D Modeler's Kit**, then hurray! The sizing should already be obvious to you. A square in the checker grid is the size of a tile in SS3D, but even if you aren't using the template, a square in Blender's default grid is the same size.

     Generally, things should be cartoonishly big, and held items should be large enough that they don't look small in the player's hands.
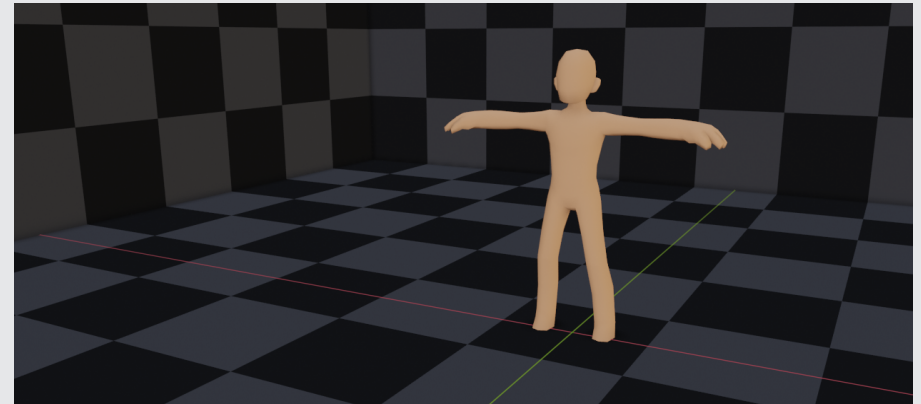
The basic human model in the space it occupies.
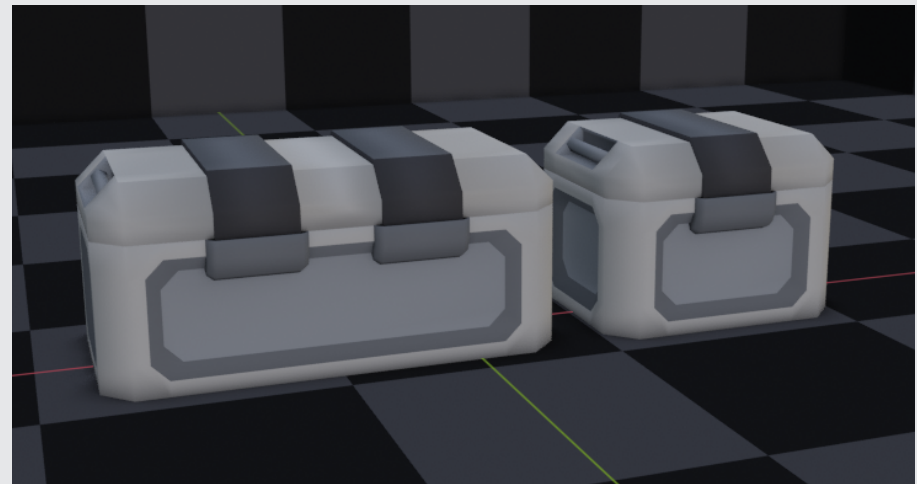
Two crates occupying 2 tiles and 1 tile respectively.

Origin placement

Detail

The function of an object's *origin* is slightly difficult to explain to someone unfamiliar with the concept, but simply put, an object's origin is its handle. In Blender, an object's origin is represented by a little orange dot. When you rotate, scale, or move an object in object mode, these functions are performed on account of its origin's location. Blender's mirror modifier is also dependent on the location of the object's origin.

The placement of the origin is something to consider, because in gameplay, it is the point from which the object spawns, or the point from which it is held. As a general rule, **if the object has a handle, the origin should be placed in the center of the handle**. If the object has no obvious handle, then it should go in the center at the very bottom of the mesh.

Another (less common) origin placement would be in the center of a rotating axis, like in the hinges of a door or lid.
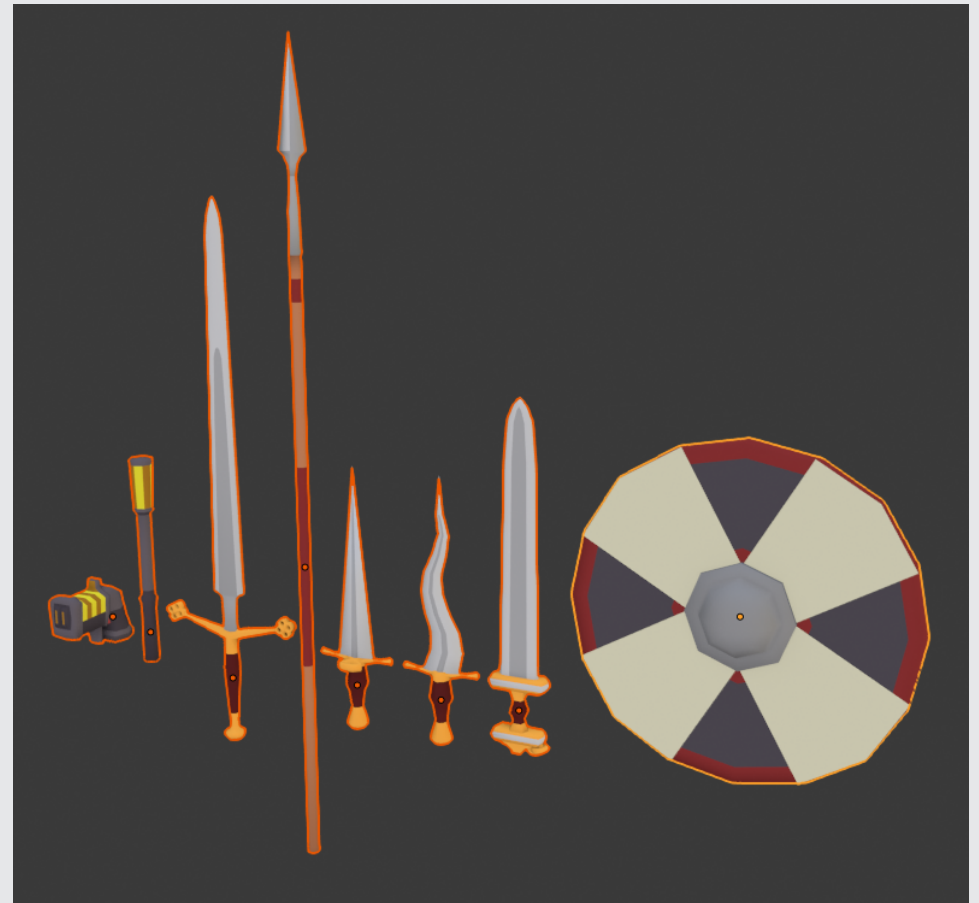

Origin placement of various held items.

Variants

Detail

     Many objects in SS3D will have variants to go with them, such as light bulbs and their broken counterparts, or different stages of consumption for food. For a clean in-game transition from one variant to the next, **it is important that all variants of an item have their origins in the same exact relative location**.

     And while all variants of an item can technically be saved as different files, **it is best that all variants of the same item are stored within the same .FBX file** to decrease clutter within folders. When opening the .FBX files, the multiple objects can be distinguished within Unity.
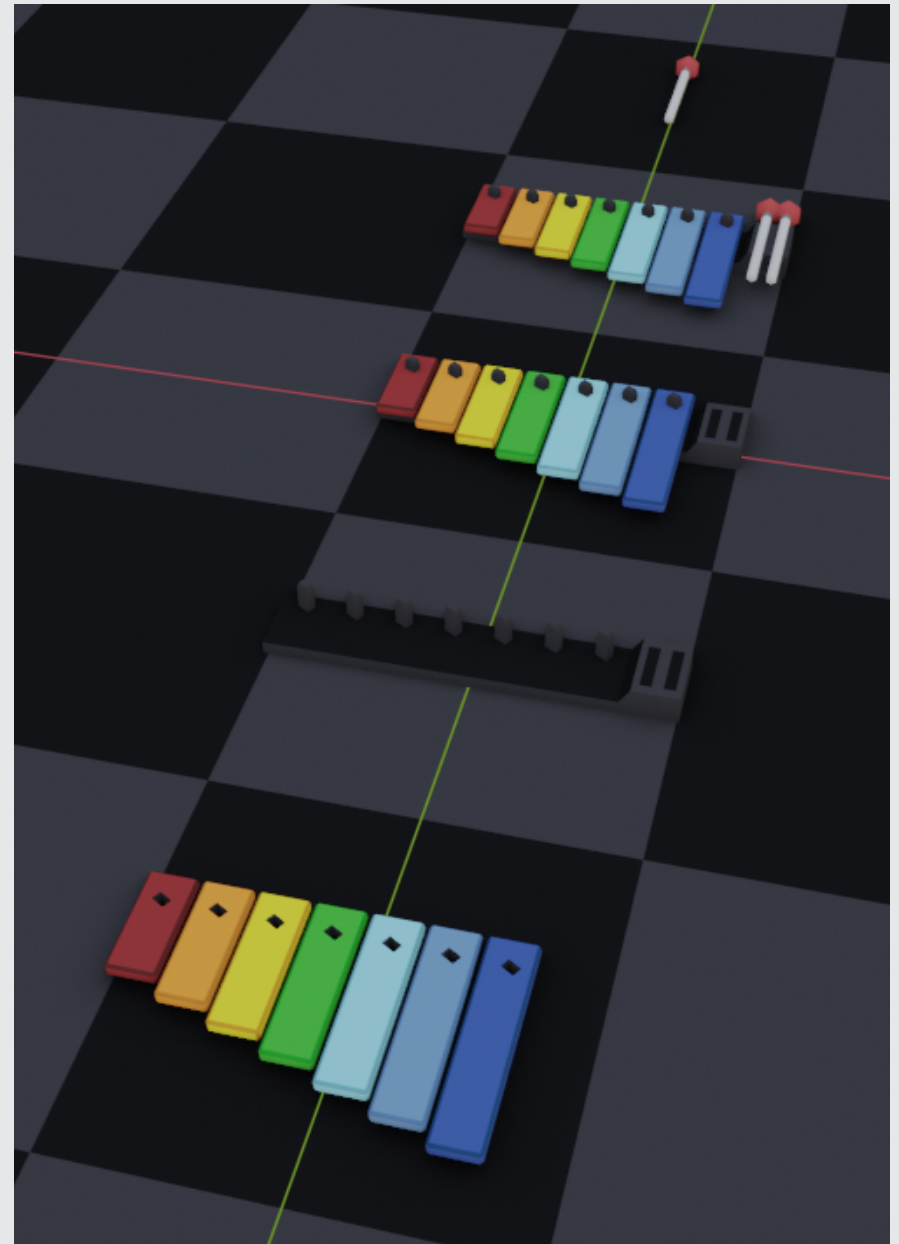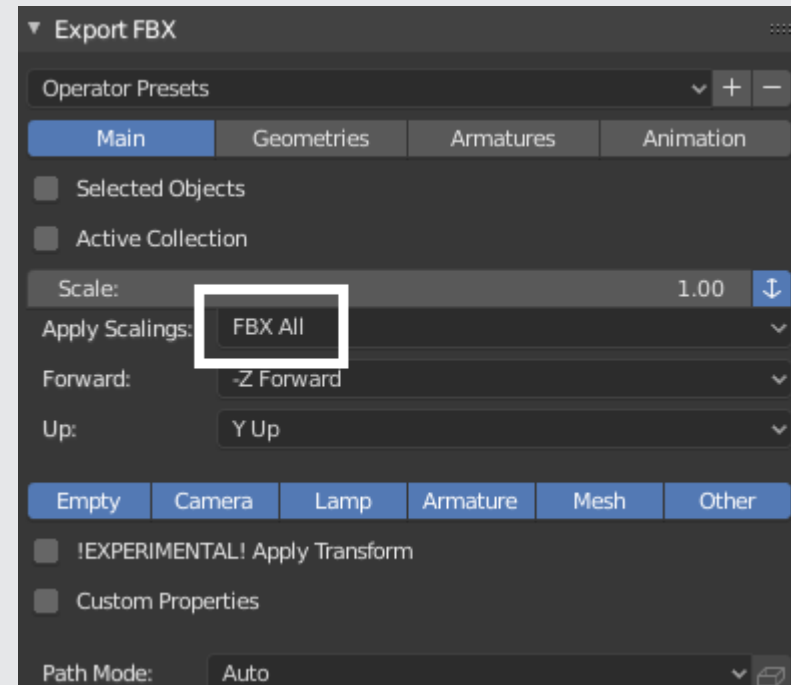
Export settings

Detail

So, you've followed this guide to a T and now you're ready to export. You might think it's as simple as hitting "export FBX," and you'd almost be right, but Unity doesn't like Blender's default scaling for some reason. Before you export, in the left panel of the file explorer window, **switch the "Apply Scalings" setting to FBX All.**

It is also worth mentioning that when exporting to FBX, it will export all the objects in your scene. You can either delete all the unnecessary objects within your scene, or select all desired objects and toggle Selected Objects to only export the important stuff.

If you are exporting a model along with an armature, be sure to go to the Armatures tab in the export settings and turn off Add Leaf Bones

Apply Scalings, found in the export settings panel.