



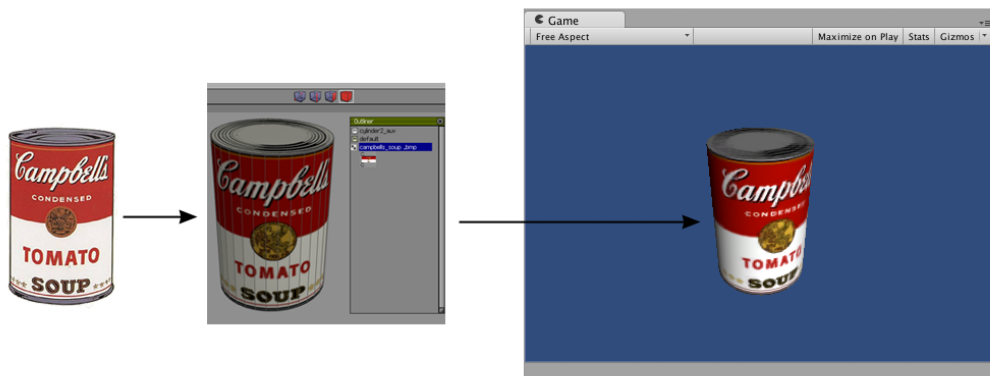
UV Texture Mapping with Wings3D and Unity3D (vers. 4.2)

Wings3D is a free 3D modeling application that is more basic but also easier to use than for example Blender (<http://www.blender.org/>). You can download Wings3D at <http://www.wings3d.com/> (for Win/Mac/Linux)

In Wings3D right-click menus give easy access to common commands. In addition to the creation of a simple primitive (a cylinder) we will only use commands related to UV mapping in this tutorial. However a good starting point for learning some of the modeling features of Wings3D is here: http://www.wings3d.com/?page_id=87.

Goal of this workshop

The goal of this workshop is to recreate one of Andy Warhol's pop art paintings, *Campbell's Soup I* (1968) as a texture mapped 3D geometry in Wings3D and then to import this model as an asset into Unity3D.



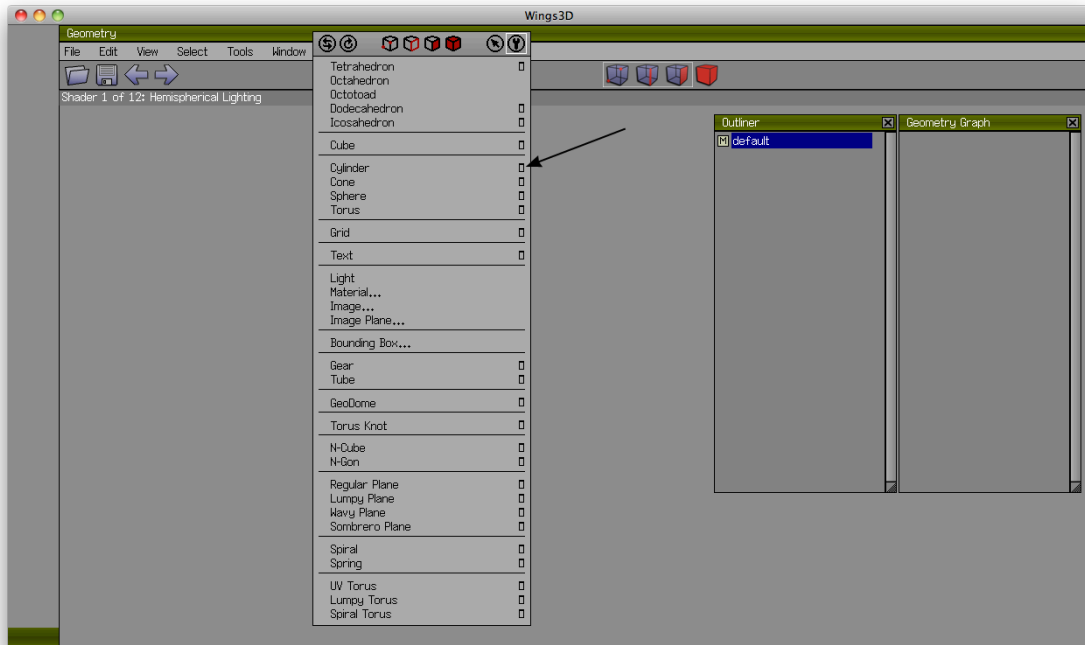
Campbell's Soup I
Andy Warhol
1968

Campbell's Soup I
recreated in
Wings3D

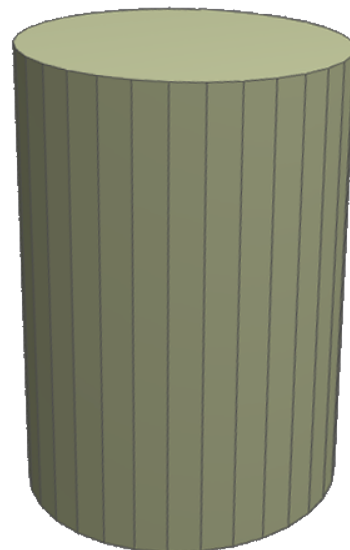
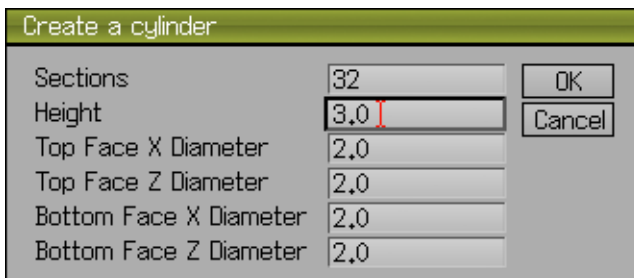
Campbell's Soup I
imported into
Unity

Modeling the soup can

Modeling the soup can is easy, we can use a cylinder, one of Wings3D's built-in primitives. Just make sure to have enough (but not too many) sections for the cylinder's circumference – 32 is a good starting point. Right click (on the Mac ctrl. + click into Wings3D's work area and select the rectangle next to Cylinder, this will give you access to the cylinder's parameter's before it is created.



You can use the settings below for the cylinder which will result in this:

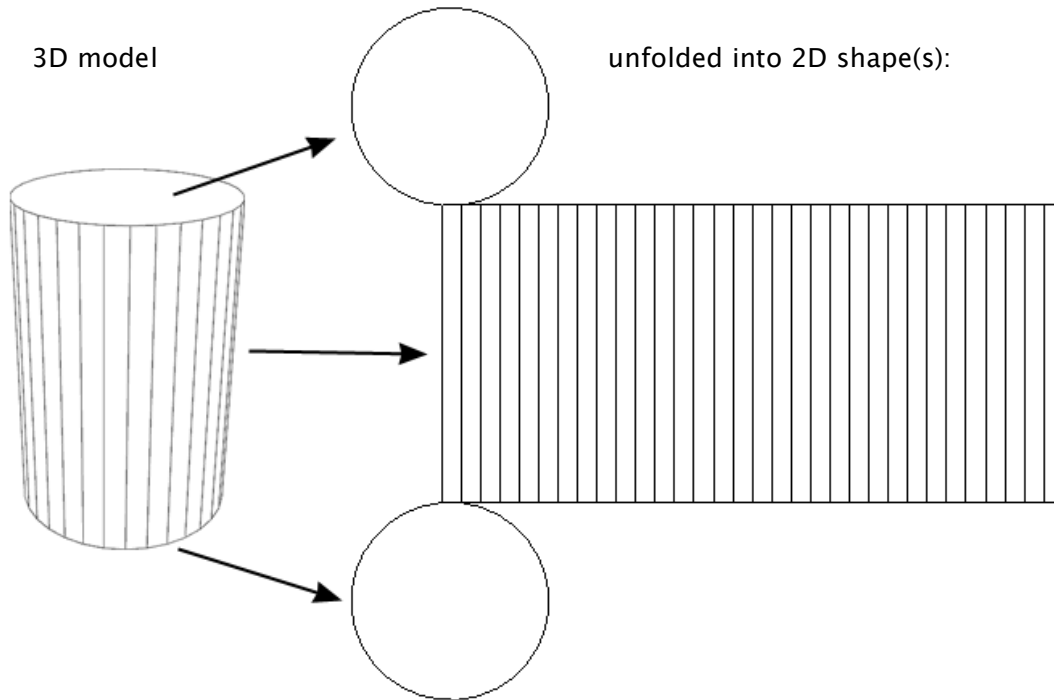


UV Texture Mapping

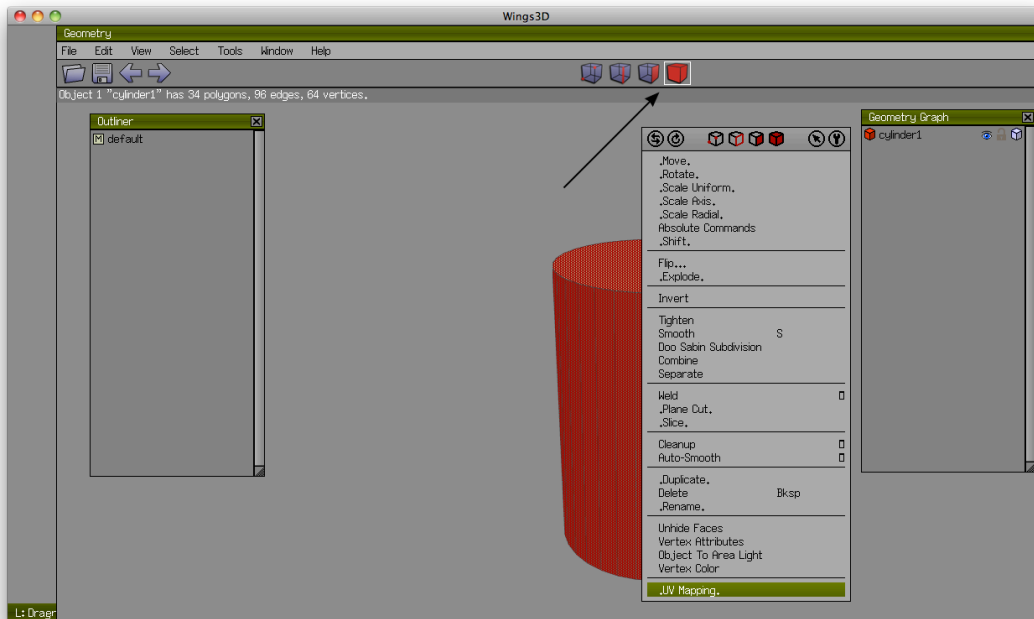
The idea behind UV texture mapping is to “unfold” a 3D model in order to turn it into a 2D shape which we can apply a texture to. This texture will then be mapped onto the 3D

model in the locations specified by the texture file. "U" and "V" represent the axes of the 2D texture since "X", "Y" and "Z" are already used to denote the axes of the 3D object.

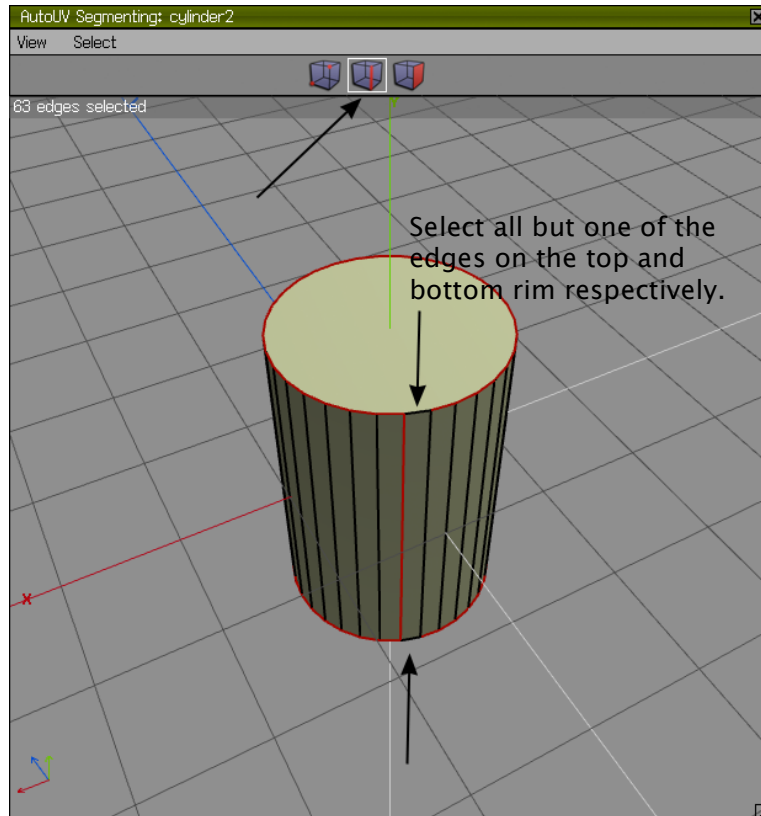
In our case we need to translate the 3D model of the cylinder into its 2D representation, much like what we would need if we wanted to build the cylinder out of a sheet of cardboard:



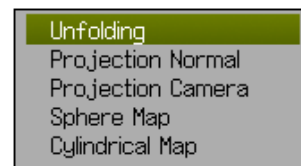
In the first step click on the object selection mode in the Wings3D toolbar and then click on the model of the cylinder. The whole model is selected and turns red. Then right click (or ctrl. + click) and choose .UV Mapping



You should see a screen very much like the one below. Now it's time to mark the edges along which you would like to cut the object, so you can unfold it. Make sure to click on the edge selection mode in the UV Mapping window and cut along the top and bottom rim leaving one edge connected to rest of the cylinder. Also select one edge connecting the top and bottom rim selection:



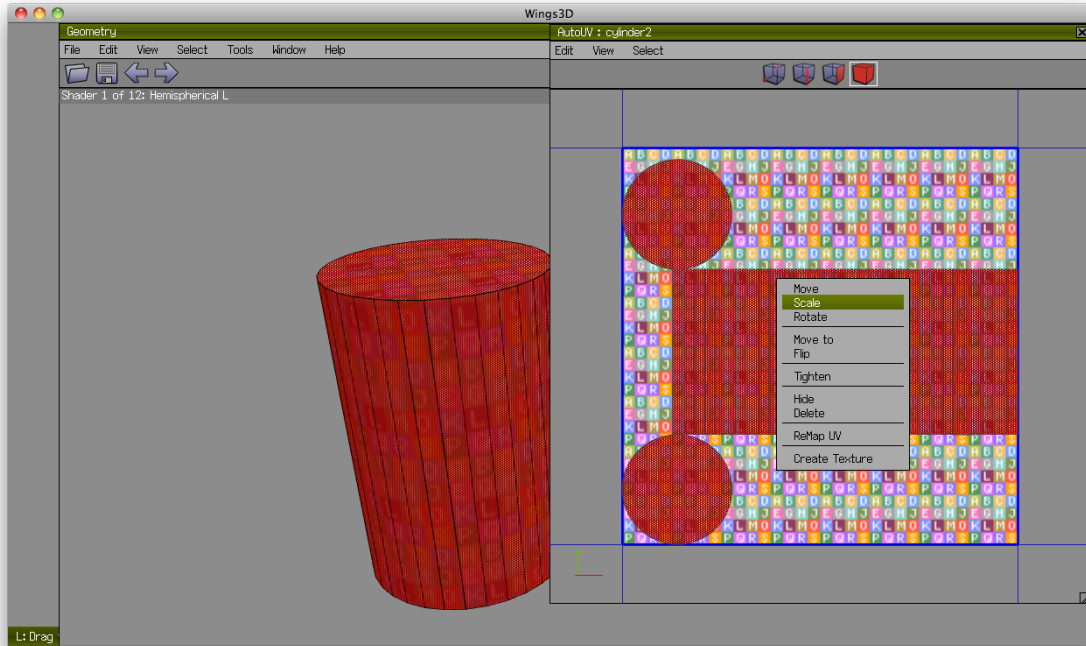
Now right click (ctrl. + click on the Mac) and select "Mark Edges for Cut." Right click again, select "Continue." Right click again and select "Unfolding."



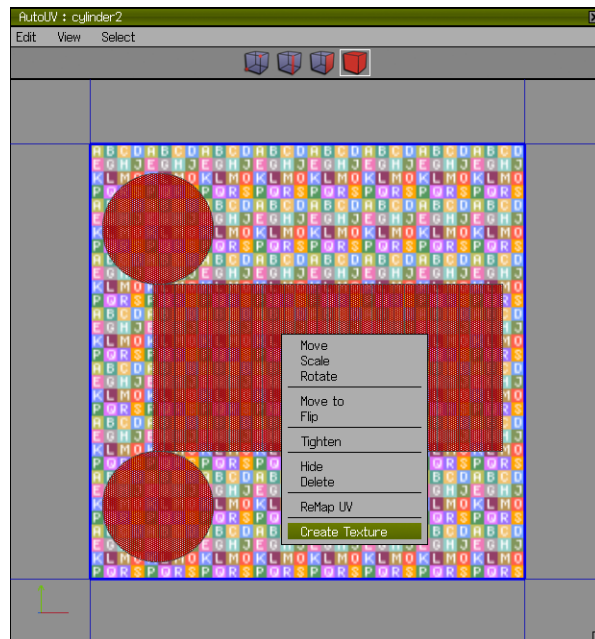
If everything goes well you should see a nicely unfolded 2D shape generated from your cuts. If not (the more complex your 3D geometries the more likely) you might have to cut certain parts completely and then join the edges in the AutoUV window, or work with models that are composed of separate geometries that can be texture mapped individually. A good video tutorial on texture mapping more complex shapes (and correcting distorted 2D shapes after unfolding) is here:

http://www.youtube.com/watch?v=wrV_YFnOGzU.

Back to Wings3D your screen should look something like this:

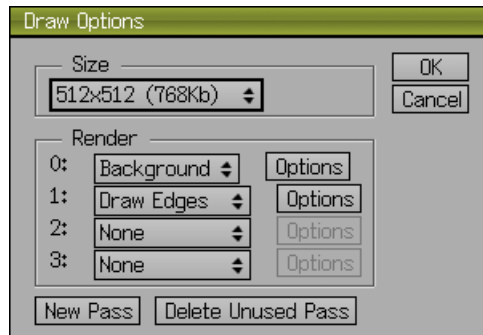


It is a good idea to have some space around your texture in AutoUV window, so we scale it down just a little bit – right click (ctrl. + click) on the selected shape and choose Scale > Uniform. You might also need to rotate your shape or join edges in this view. Once you are happy with how the texture template is mapped onto your cylinder in the 3D view you can right click (ctrl. + click) the 2D shape again and select “Create Texture.”

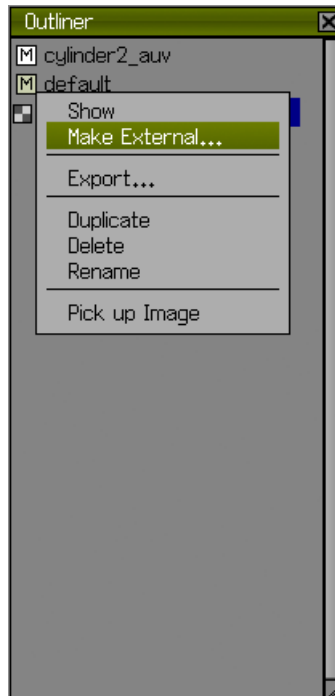


You can then choose the size of your texture – this depends on the level of detail you would like to achieve, but also be aware that larger textures can slow down the

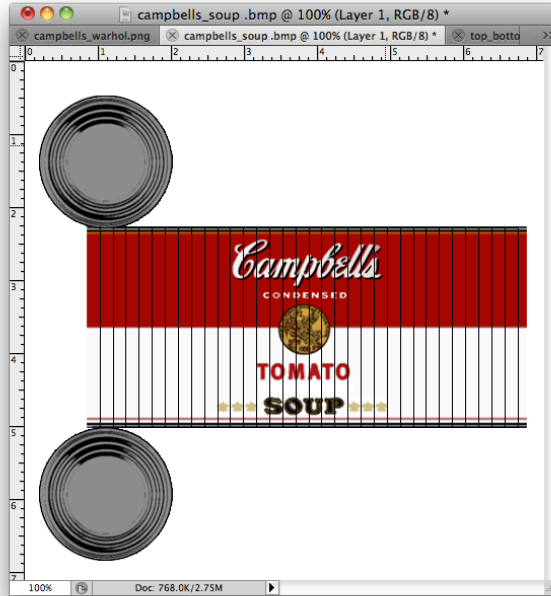
performance of your game. As a rule of thumb try to choose the smallest size possible for your purpose.



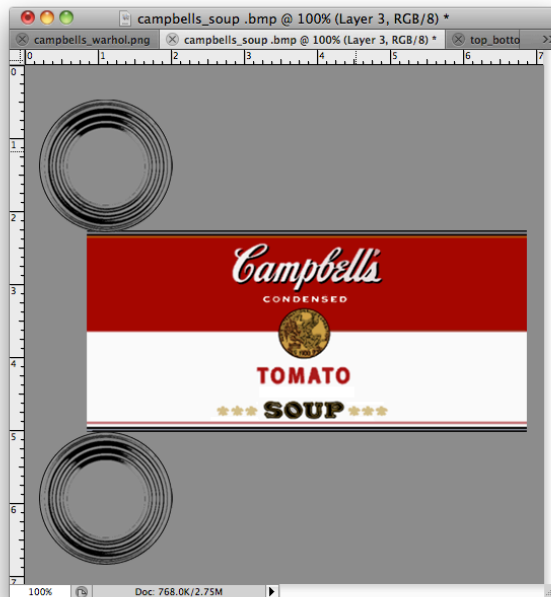
This is what your screen should look like now, if you don't see the Outline window, open it from the Menu: Window > Outliner. In the Outliner you see the texture you just created, it is plain white with black lines outlining your object. Right click (ctrl. + click) the texture in the Outliner window and select "Make External..." so we can export the texture file and continue to work on it in Photoshop or GIMP.



Save the resulting file and open it up in Photoshop to align the actual textures with the 2D shape. If you don't know how to do this start looking up tutorials on how to work with layers in Photoshop (or GIMP, if you are using this software tool):



It is a good idea to make the actual textures slightly larger than the 2D shapes they should fill (bleed), in this case I simply filled all of the background with gray, the same gray that shows up around the edges of where I cut the 3D model. I also deleted the black outline of the 2D shape exported from Wings3D:

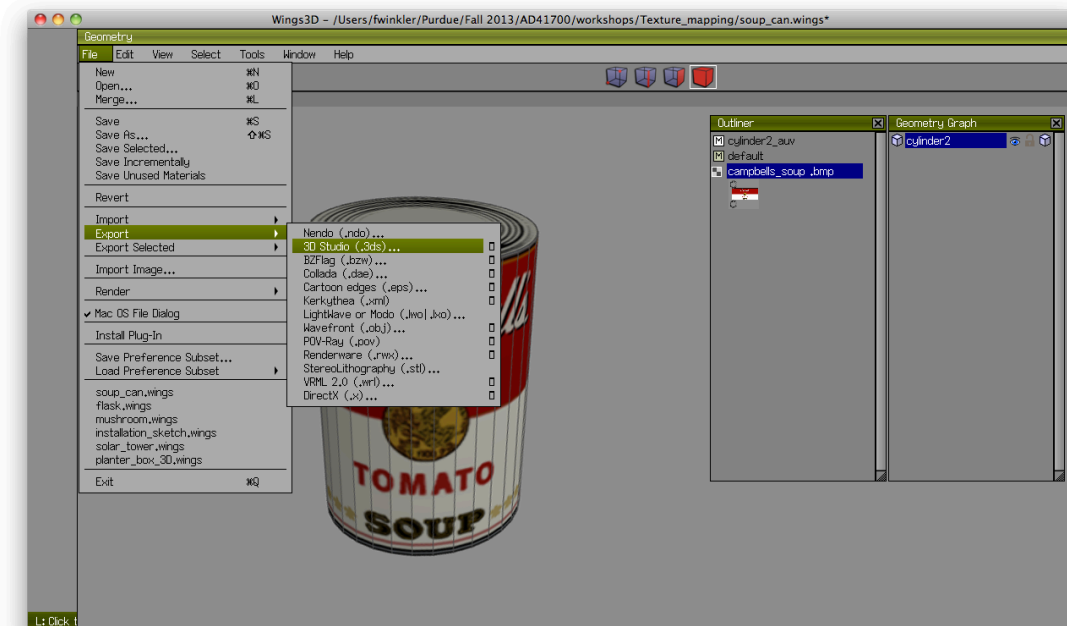


I can save this file (replacing the original file exported from Wings3D and go back into Wings3D. There, I need to refresh the texture, so that the changes I made to the texture in Photoshop take effect. Right click (ctrl. + click) on the texture in the Outliner window and choose "Refresh."



You should now see the new texture applied to the cylinder. If not, make sure textures are enabled in the View Menu: View > Show > Show Textures.

In the last step we need to export this textured cylinder in a format that is easy to import into Unity. I choose the 3D Studio Max (.3ds) format.

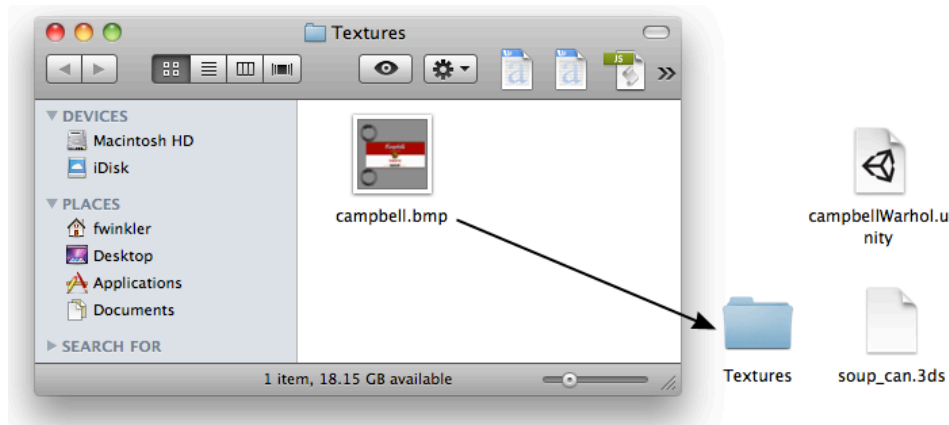


Importing textures and 3D assets into Unity

Here is a good general overview of how to import models from a 3D application into Unity:

<http://docs.unity3d.com/Documentation/Manual/HOWTO-importObject.html>

Since Unity needs the actual 3D geometry as an asset and the texture (in a separate file), we need to move a copy of the exported .3ds file into our Unity project's asset folder and create a folder titled "Textures" in the same place (if it doesn't already exist). Then move a copy of the texture into this folder. In this example the exported .3ds file is called "soup_can.3ds" and the corresponding texture file is "campbell.bmp," the unity scene in which we are using this model is called "campbellWarhol.unity."



After copying the files into their respective locations we can import soup_can.3ds as an asset into Unity: Asset > Import New Asset... we do not need to import the texture for this model separately, rather, placing it into the Textures folder, Unity will find it and link it to the model automatically.

