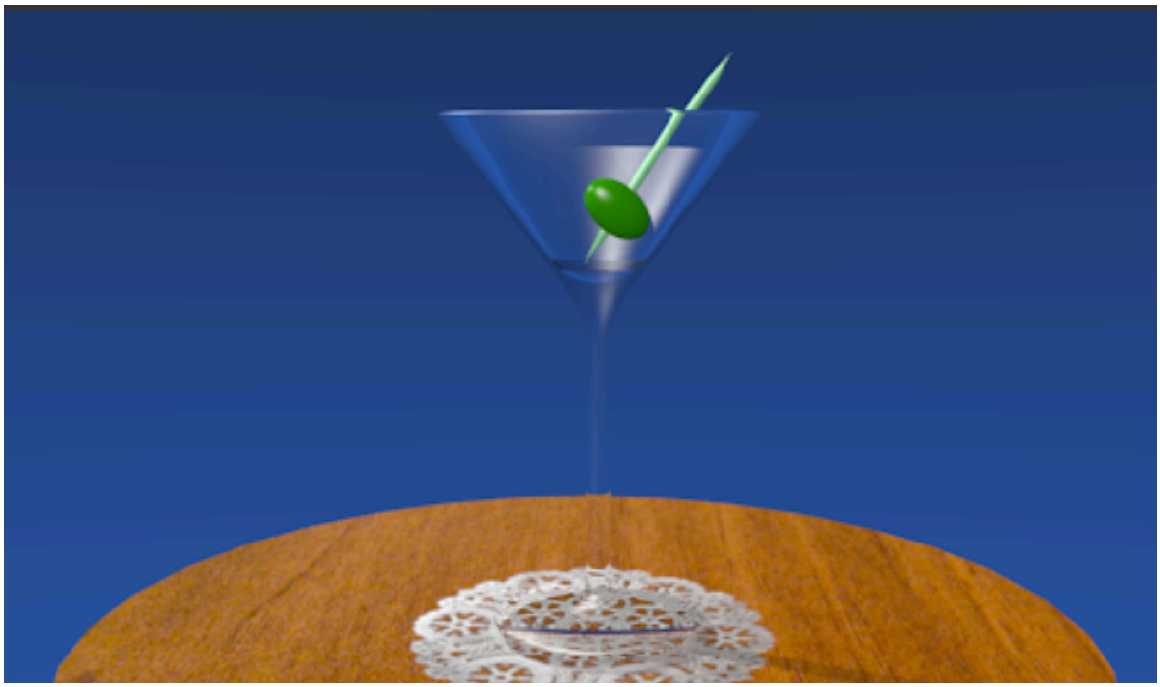
Course: 3D Design
Title: Martini
Blender: Version 2.6X
Level: Beginning
Author; Neal Hirsig (nhirsig@tufts.edu)
(May 2012)

This tutorial assumes that you already know how to:

- Display orthographic and perspective views
- Go to Edit and Object modes
- Go to solid and wireframe display modes
- Extrude sub-objects along an X,Y or Z axis
- Loop cut and slide and Loop select

Martini

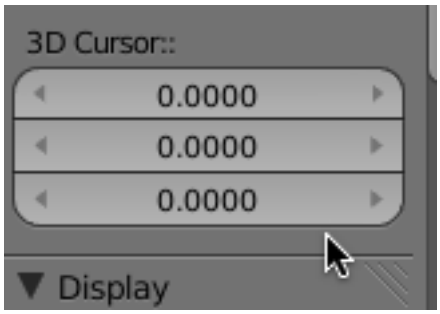


In this PDF tutorial we will me modeling and texture a martini glass as shown above.

The Glass:

Open a new Blender file. Select the default cube object and the lamp object and delete them.

In the 3D Editor Properties panel set your cursor at X, Y, Z, = 0



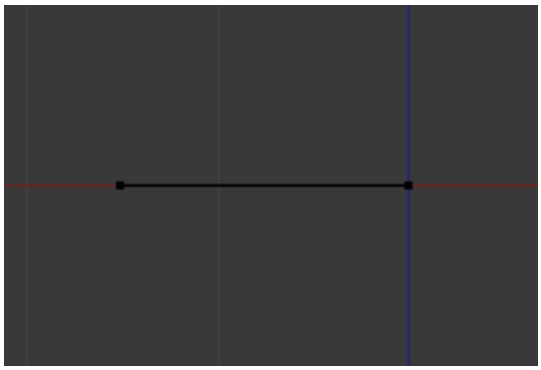
Go to top view and add a plane object. Rotate the plane object 90 degrees about the X Axis.

Go to front view. With the plane object selected, TAB into edit mode and select 3 of the 4 vertices and delete them. You should now be left with one vertex.

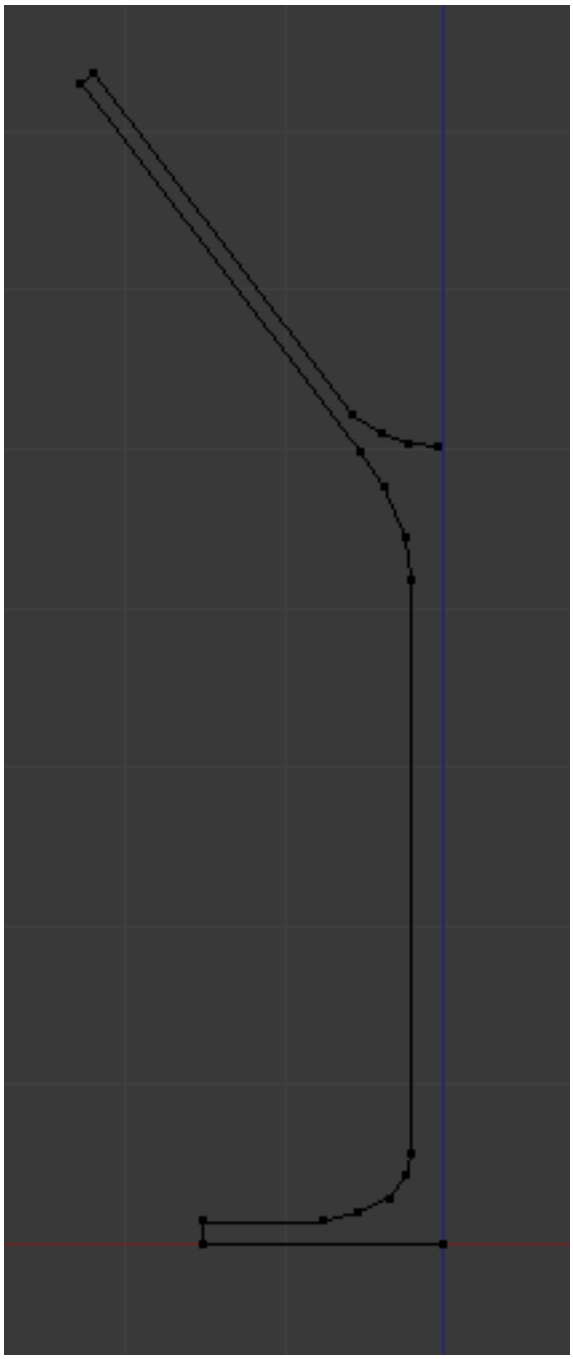
Place your 3D cursor at X, Y, Z = 0

Select the single vertex and press SHIFT-S (Snap) and snap the selection to the cursor. The single vertex should now be located at X, Y, Z = 0.

With the vertex selected, press the EKEY and extrude the vertex to the left about 1.5 Blender units.



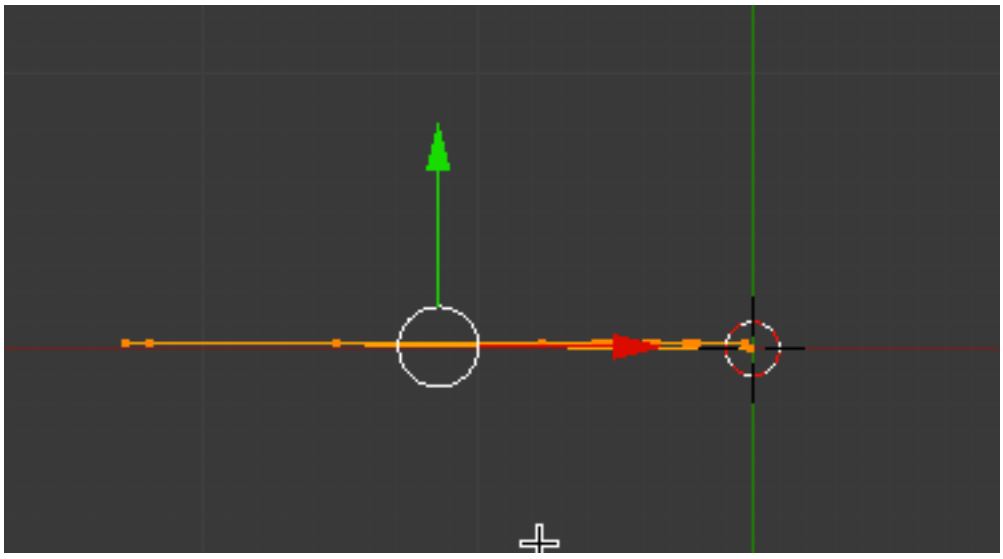
Continue on extruding and moving the vertices until you have modeled a cross-section of a martini glass as shown below.



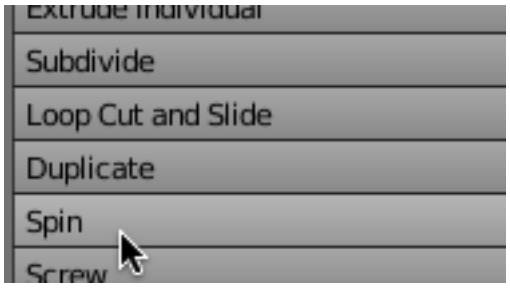
Mine is about 7 and one-third Blender units high and about 2 and one-third Blender units wide.

When you are finished modeling the shape, place your cursor at X, Y, Z = 0 and then select all of the vertices.

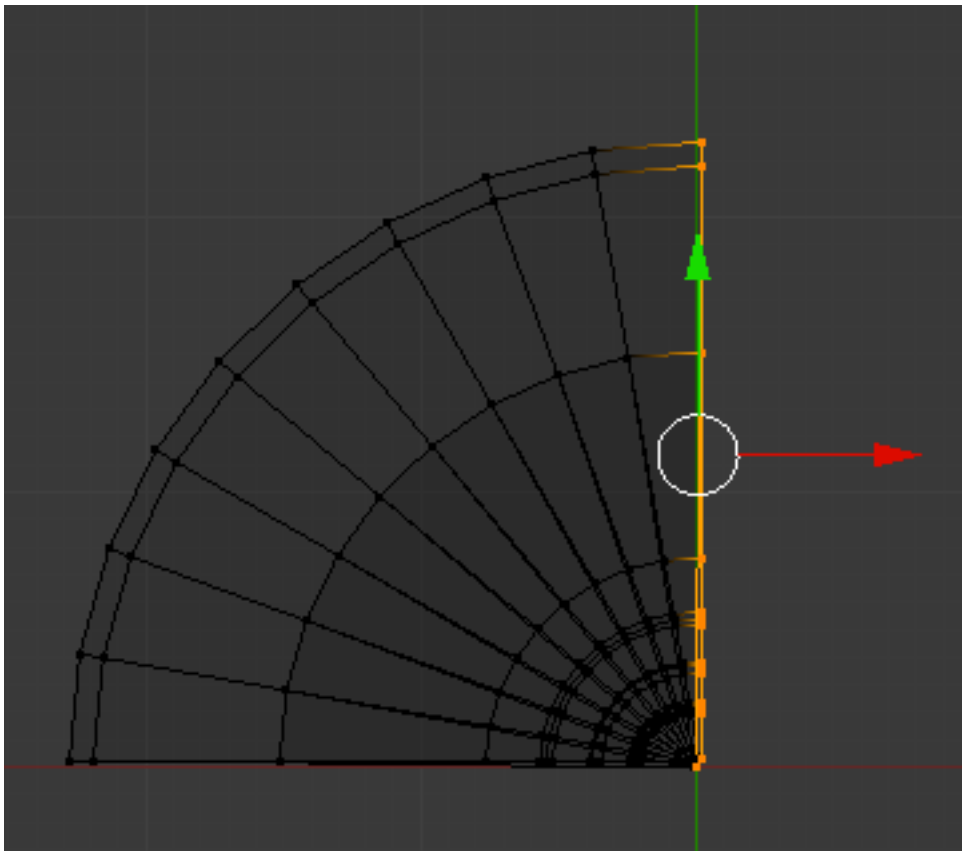
Go to top view.



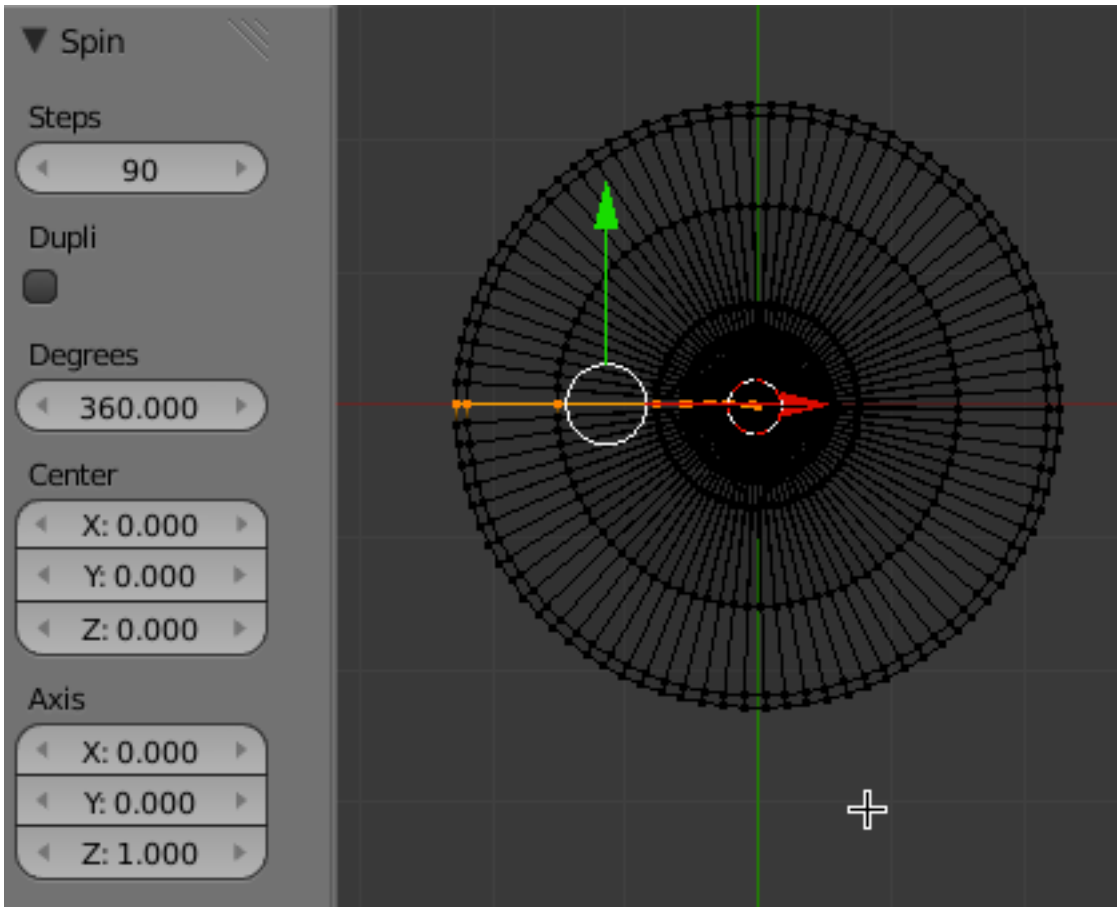
In the 3D Editor Viewport Tools Panel press the Spin Button.



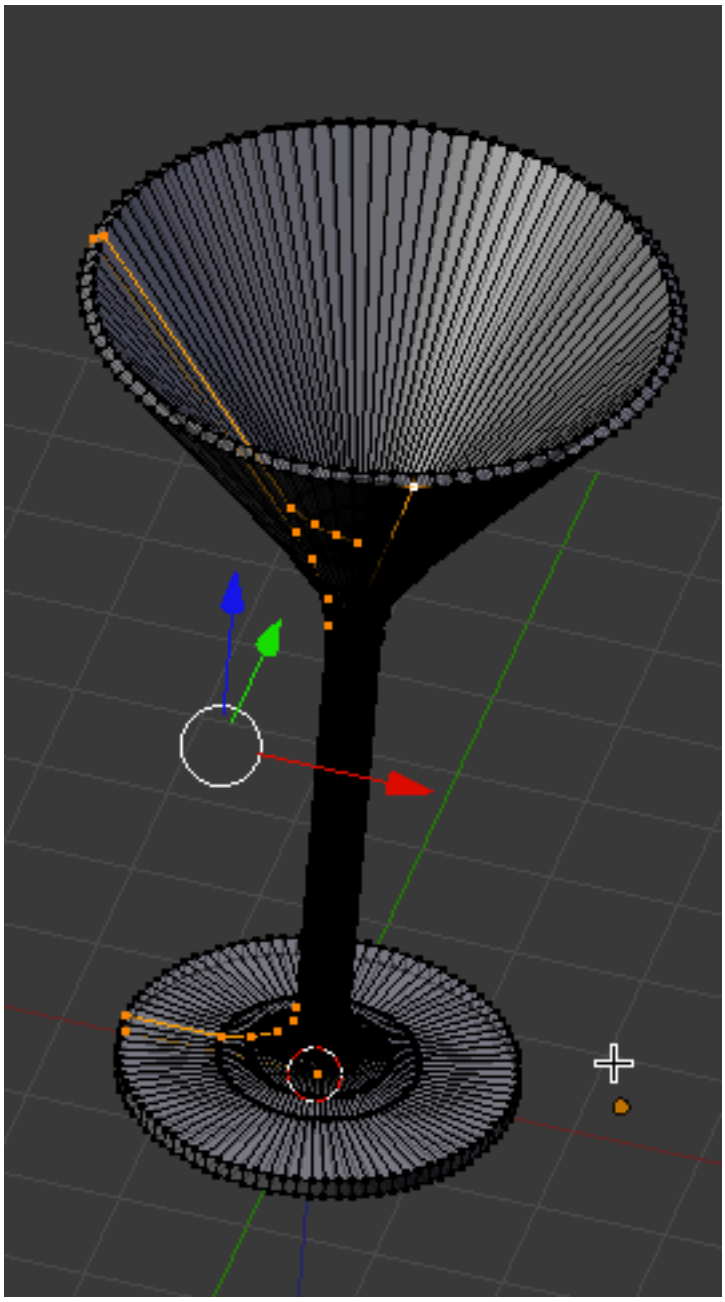
This will spin the cross-section shape 90 degrees around the Z Axis (using the cursor ass the pivot point reference)



In the 3D Editor Tool Panel, set the degrees to 360 and the steps to 90.



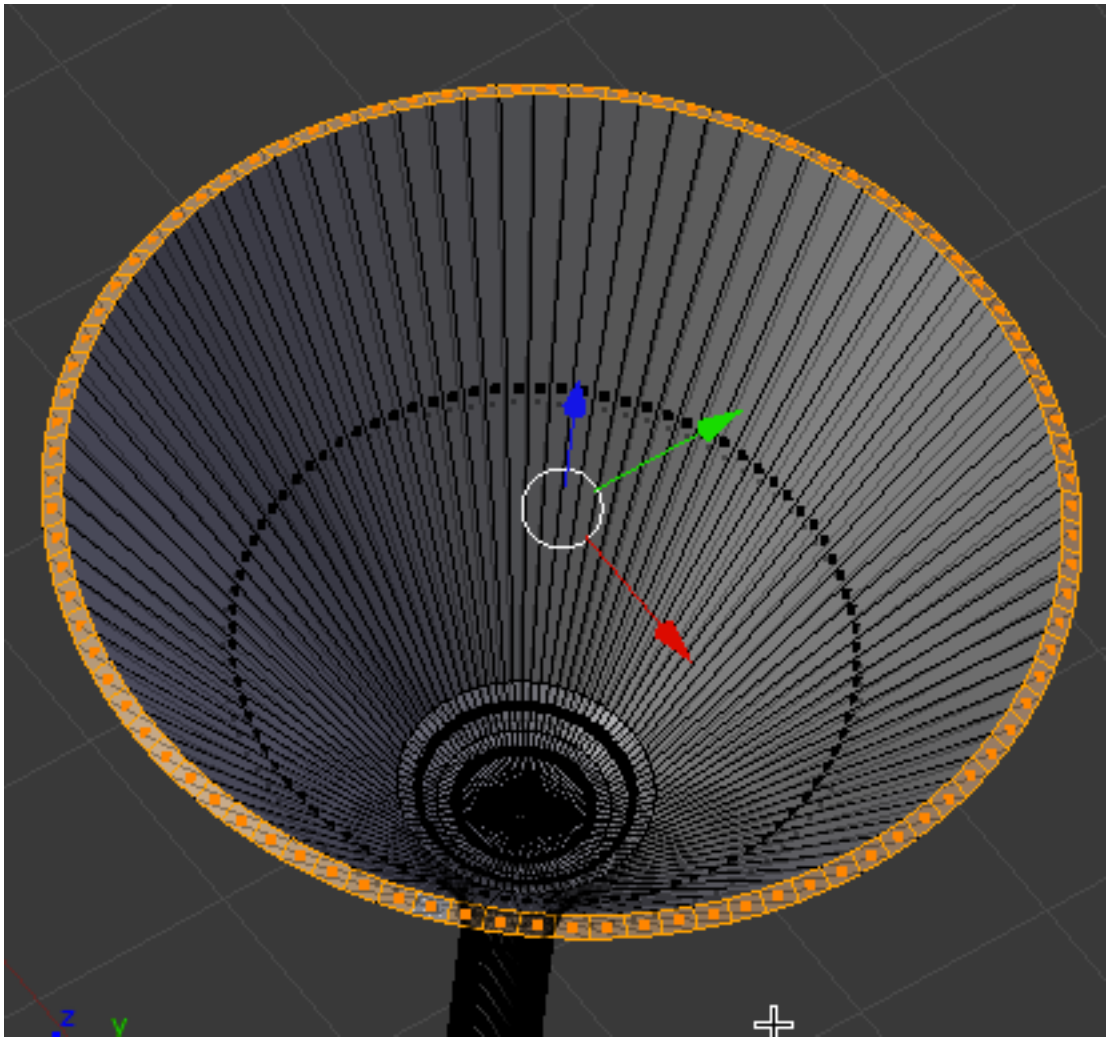
Rotate your view to a more dimension view.



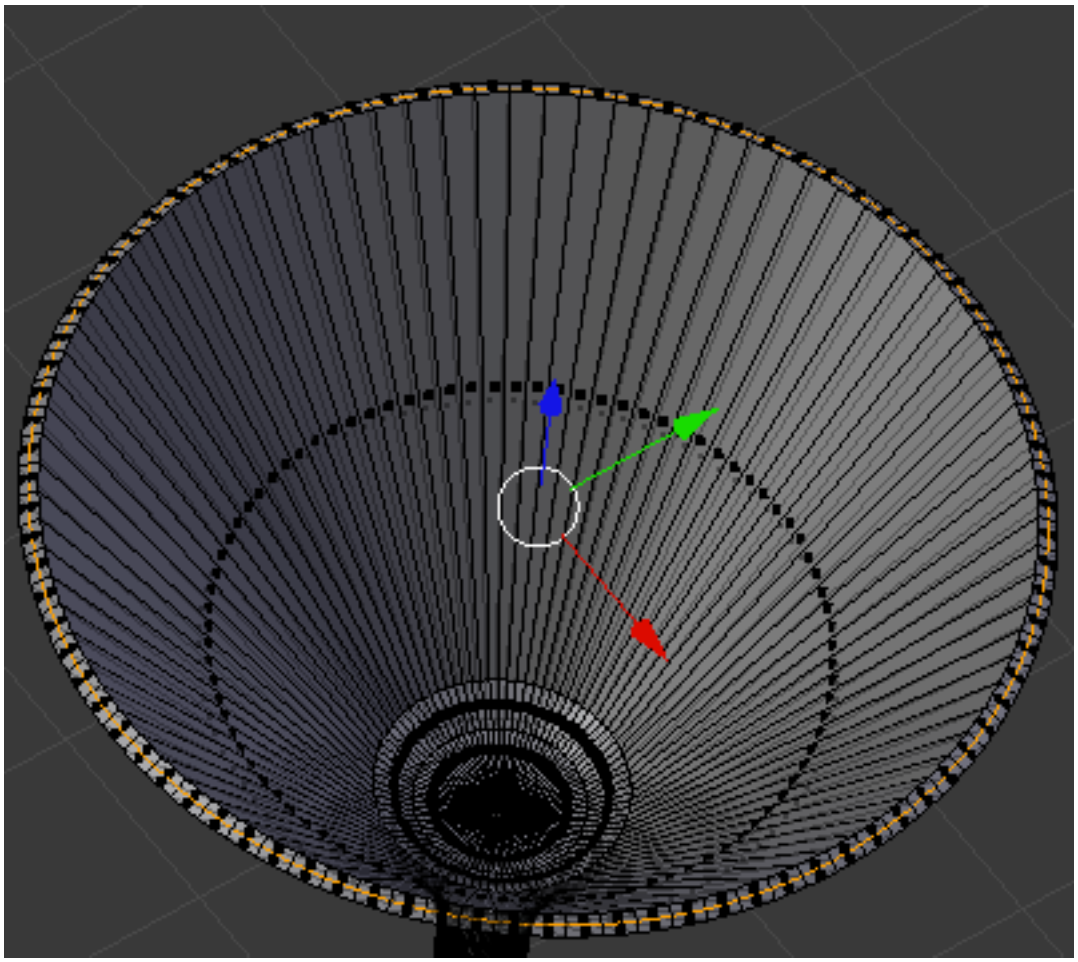
If you are not happy with the result, CTRL-Z undo the spin and reshape your cross-section shape.

When you are happy with the final result, select all of the vertices and press CTRL-V (vertex menu) and “Remove Doubles”. This will remove the initial overlapping set of vertices.

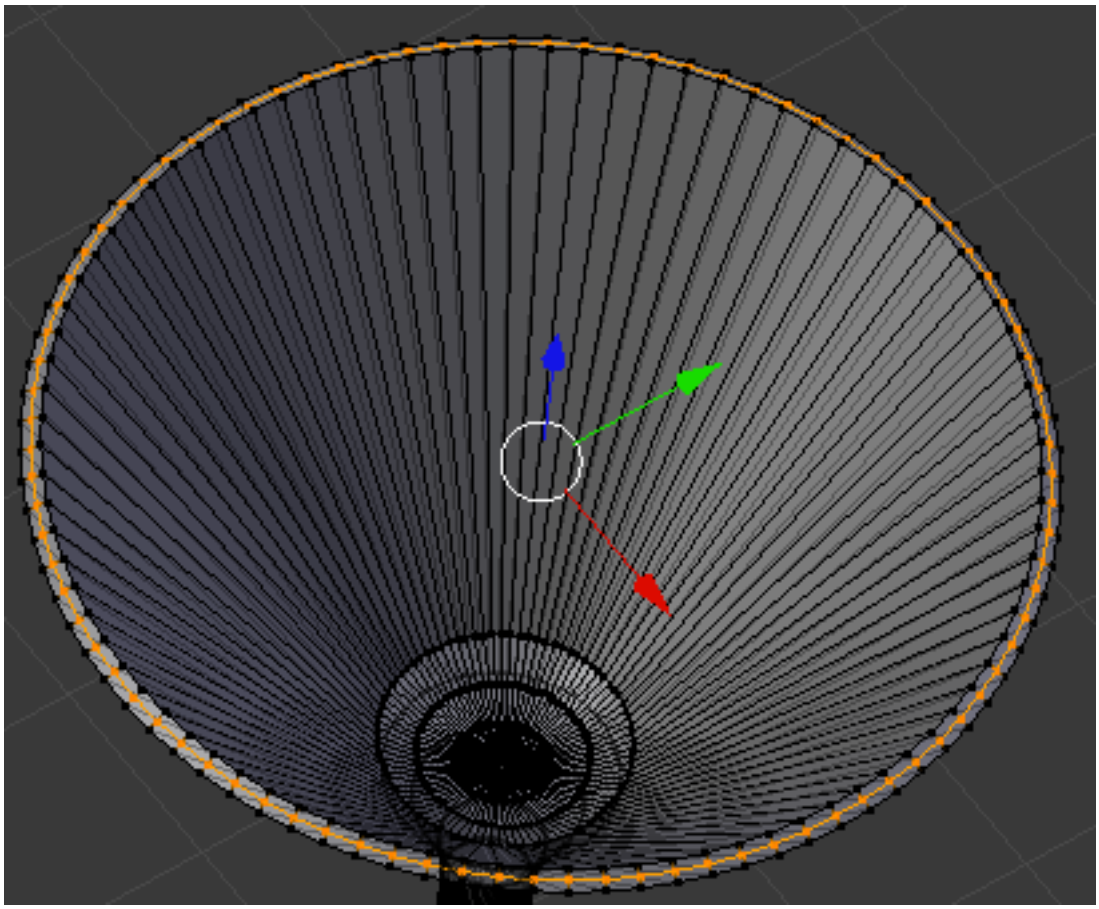
Rotate your view to a nice close-up of the top rim of the glass. Press CTRL-TAB and go to face select mode. Hold your ALT KEY down and select one of the top rim faces. The entire rim loop should automatically be selected.



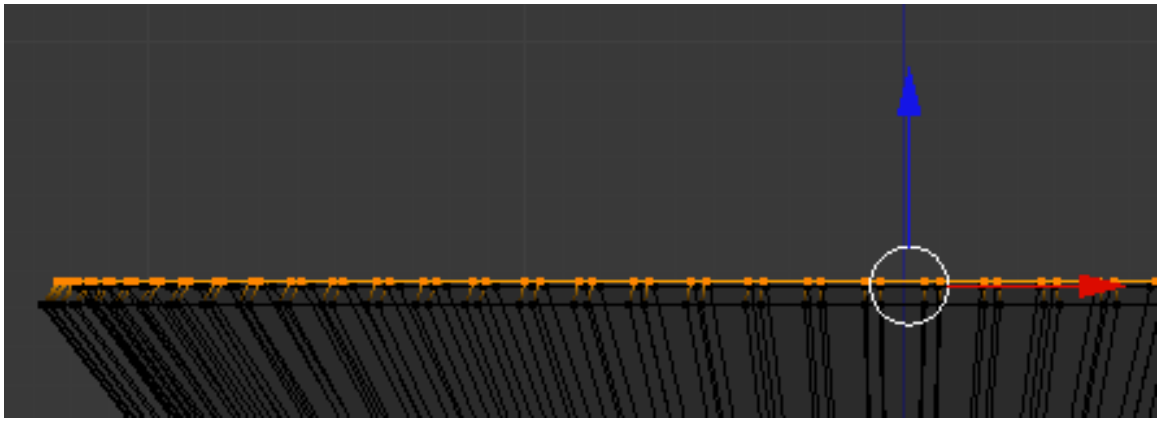
With the top rim faces selected press the “loop cut and slide” button on the 3D Editor Tool Panel. With a bit of adjustment, you should be able to cut a loop in the top rim of the glass as shown below.



Switch to vertex select mode. Hold down your ALT KEY and select one of these middle loop vertices. The entire loop should be selected as shown below.

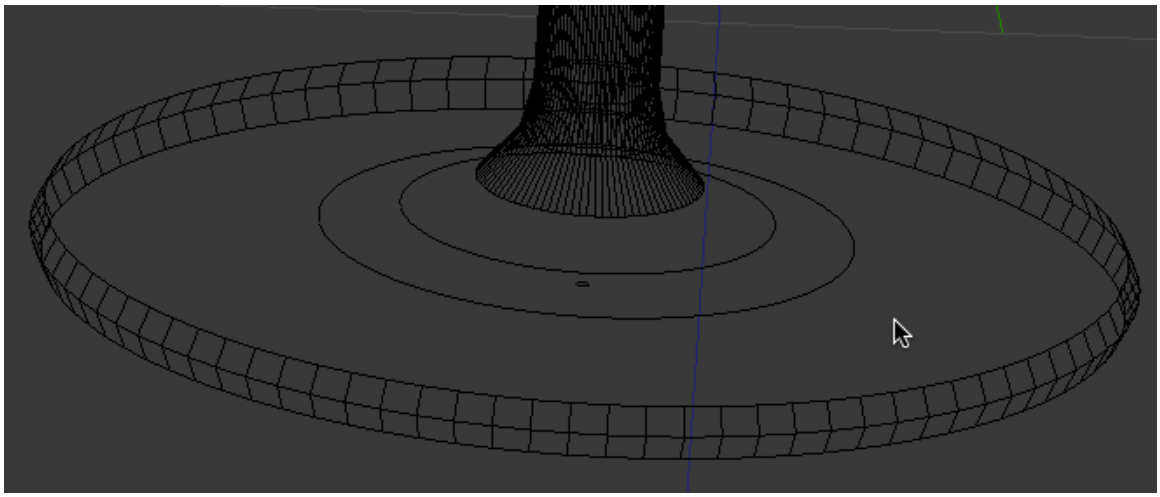


Go to front view and move this loop of vertices up along the Z Axis slightly.



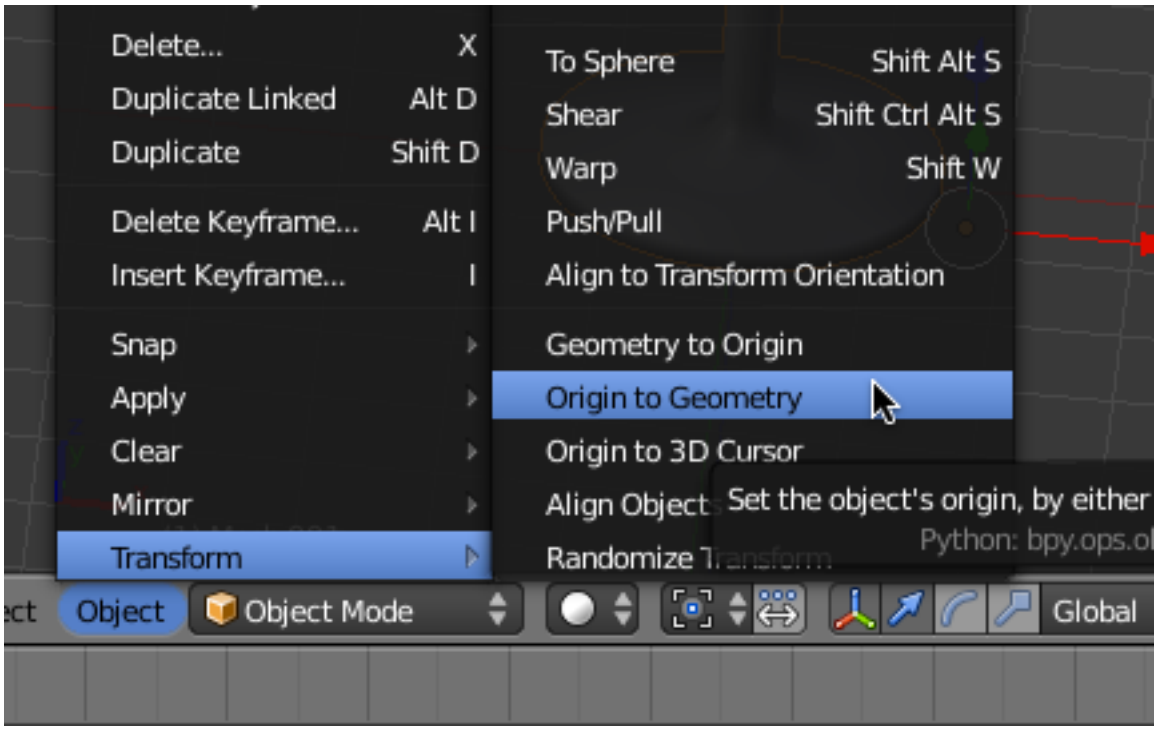
When smoothed this will have the effect of rounding off the rim of the glass.

Do the same thing to the bottom rim of the glass. However, instead of raising the loop up along the Z Axis, scale the loop out a bit as shown below.

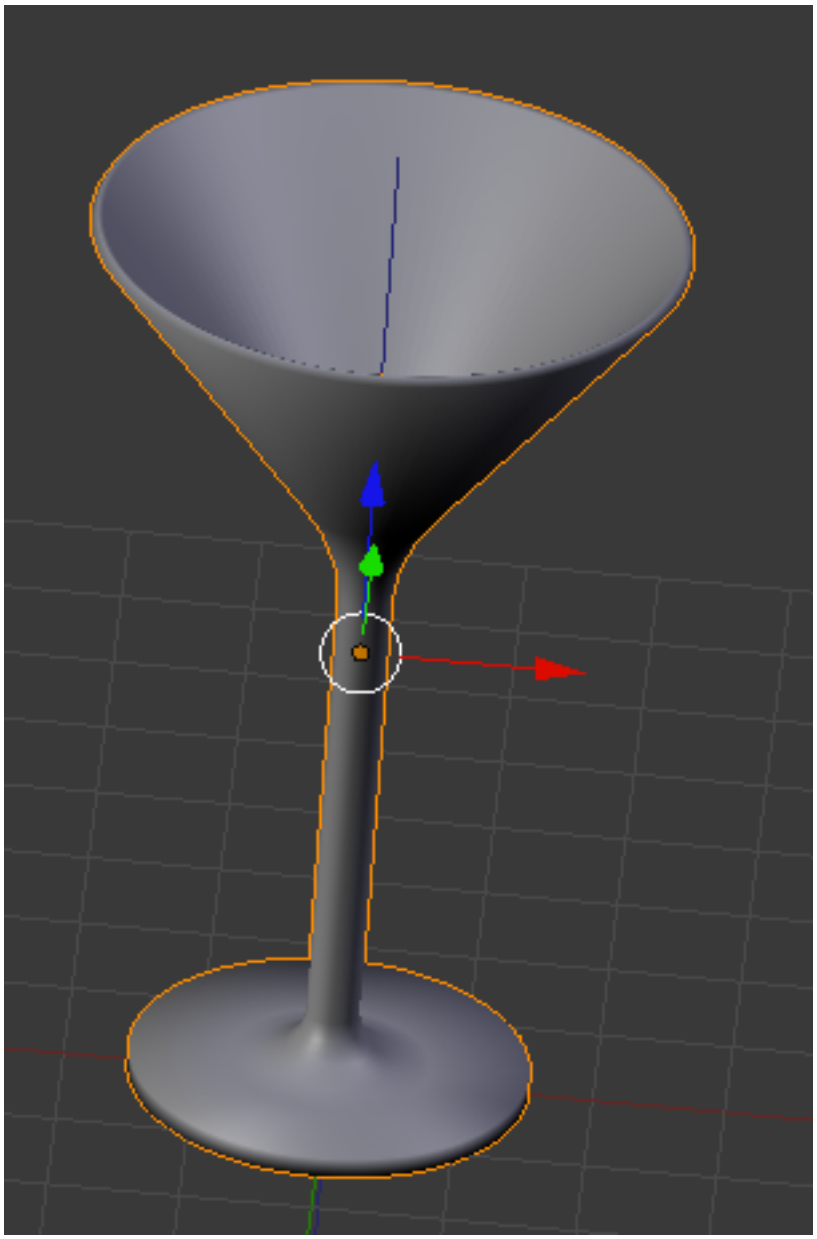


When you are finished, TAB out of edit mode and with the gloss selected, press the Smooth button located in the 3D Editor Tool Panel. Name this object “Glass”.

Select the glass and press the Object button located on the 3D Editor Header and select Transform then Origin to Geometry.



This will place the object origin (Center Point) in the center of the object.

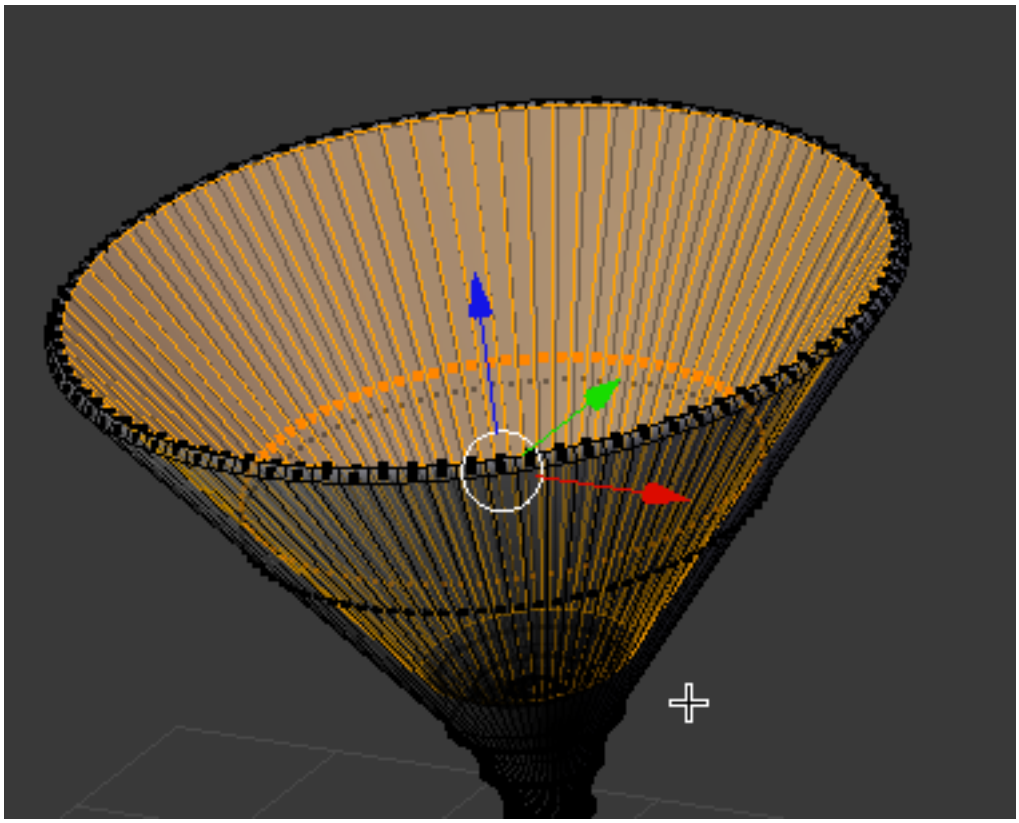


The Gin:

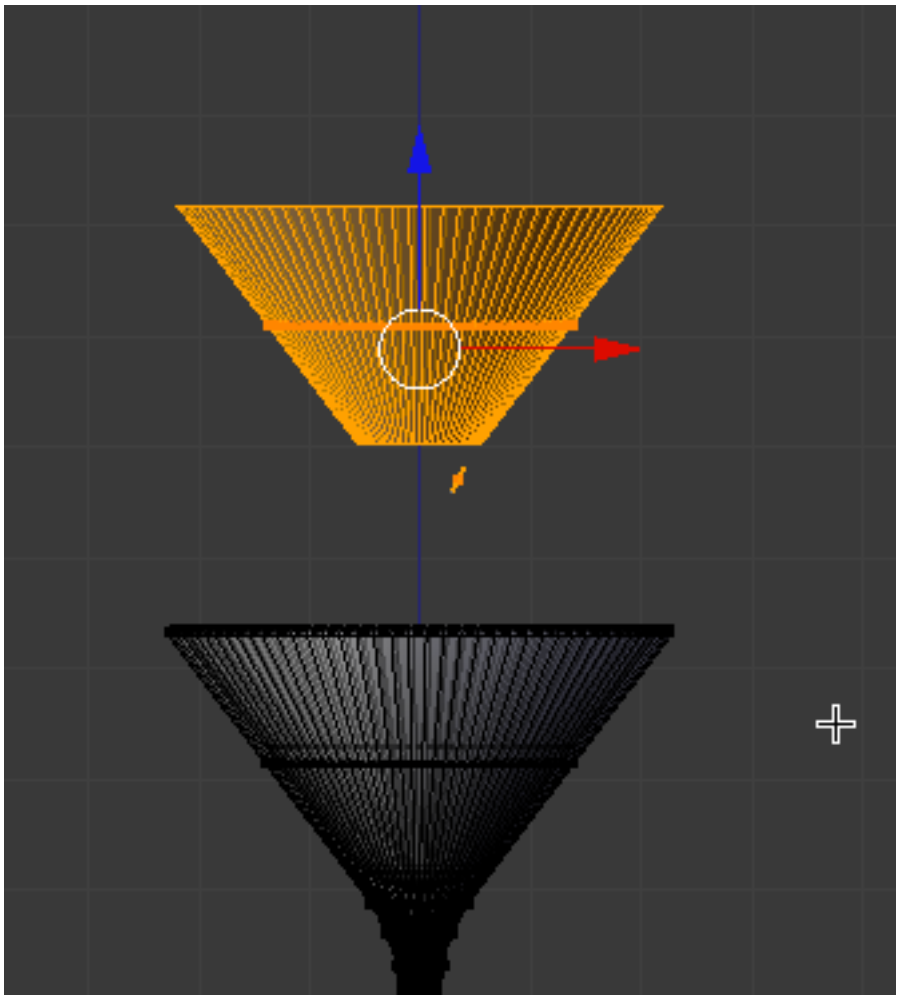
Next we need to model the gin in the martini glass.

Select the glass object and TAB into edit mode Go to Face select. Rotate the glass object so you can get a good look at the inside of the glass.

Loop select the inside faces.

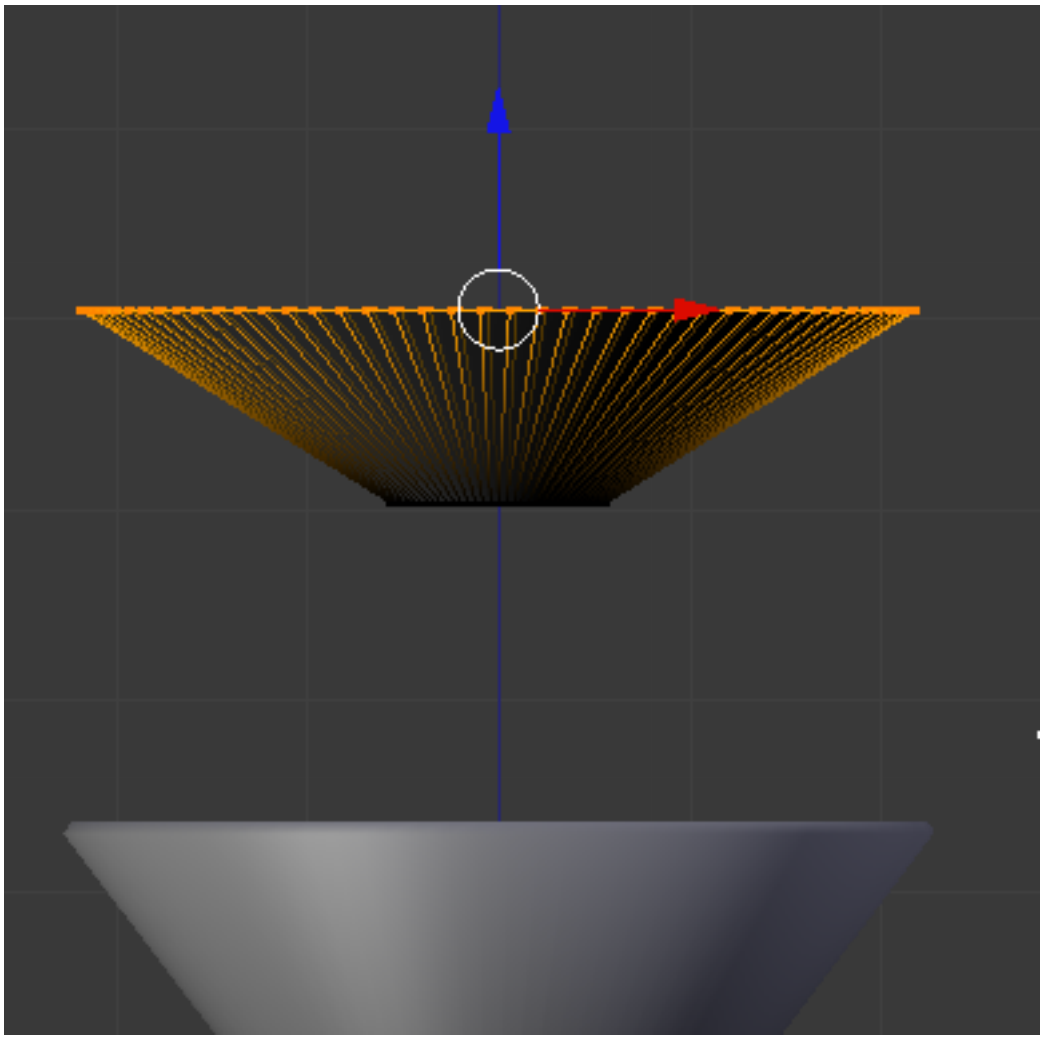


With the faces selected, press SHIFT-D (duplicate) and then press the ZKEY and move the duplicate faces up and out of the glass.

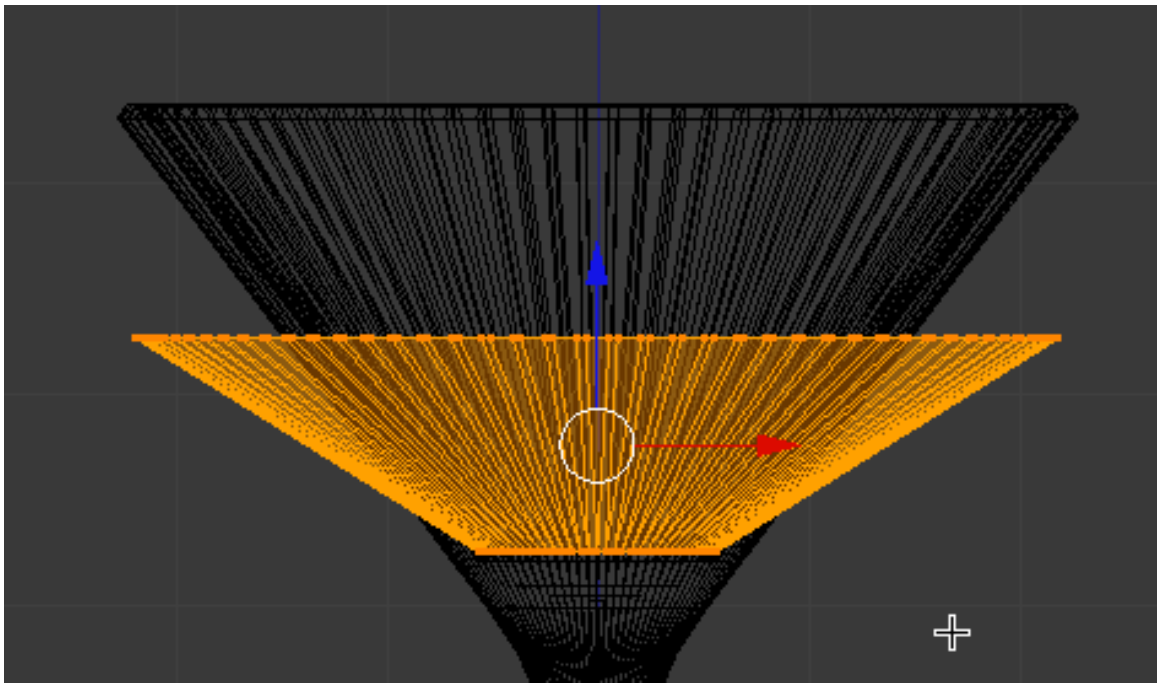


Next press the PKEY and separate the selection. TAB out of edit mode and select the new object and name this new object “Gin”.

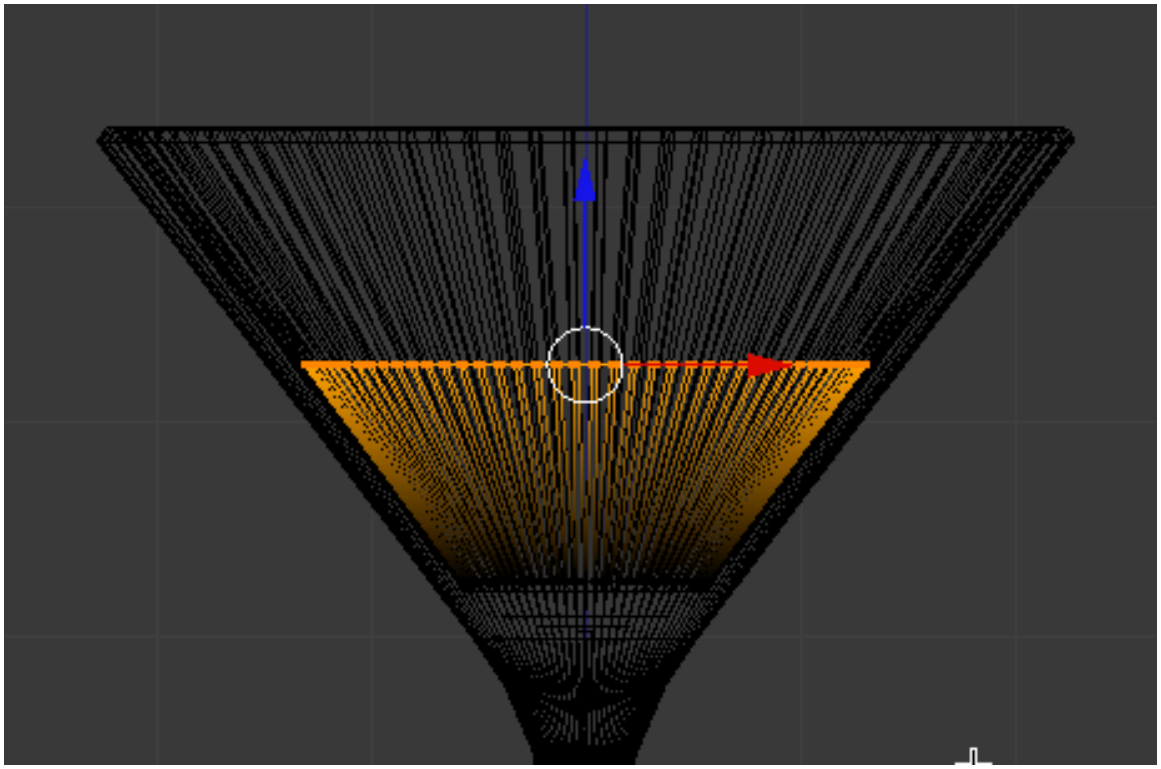
Tab into edit mode, go to vertex select mode, and box select the top vertices. Move these vertices down along the Z Axis as shown below.



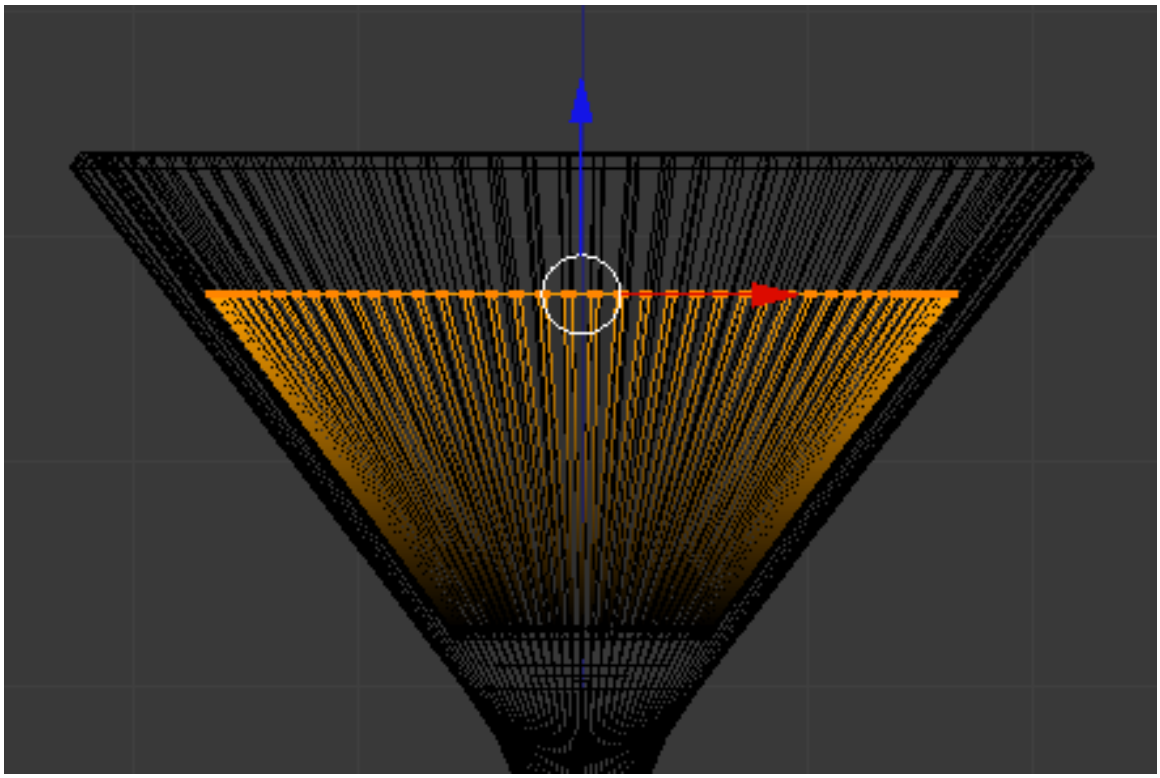
Now select all of the vertices and move them back into the glass as shown below.



Reselect the top vertices and scale them in as shown below.

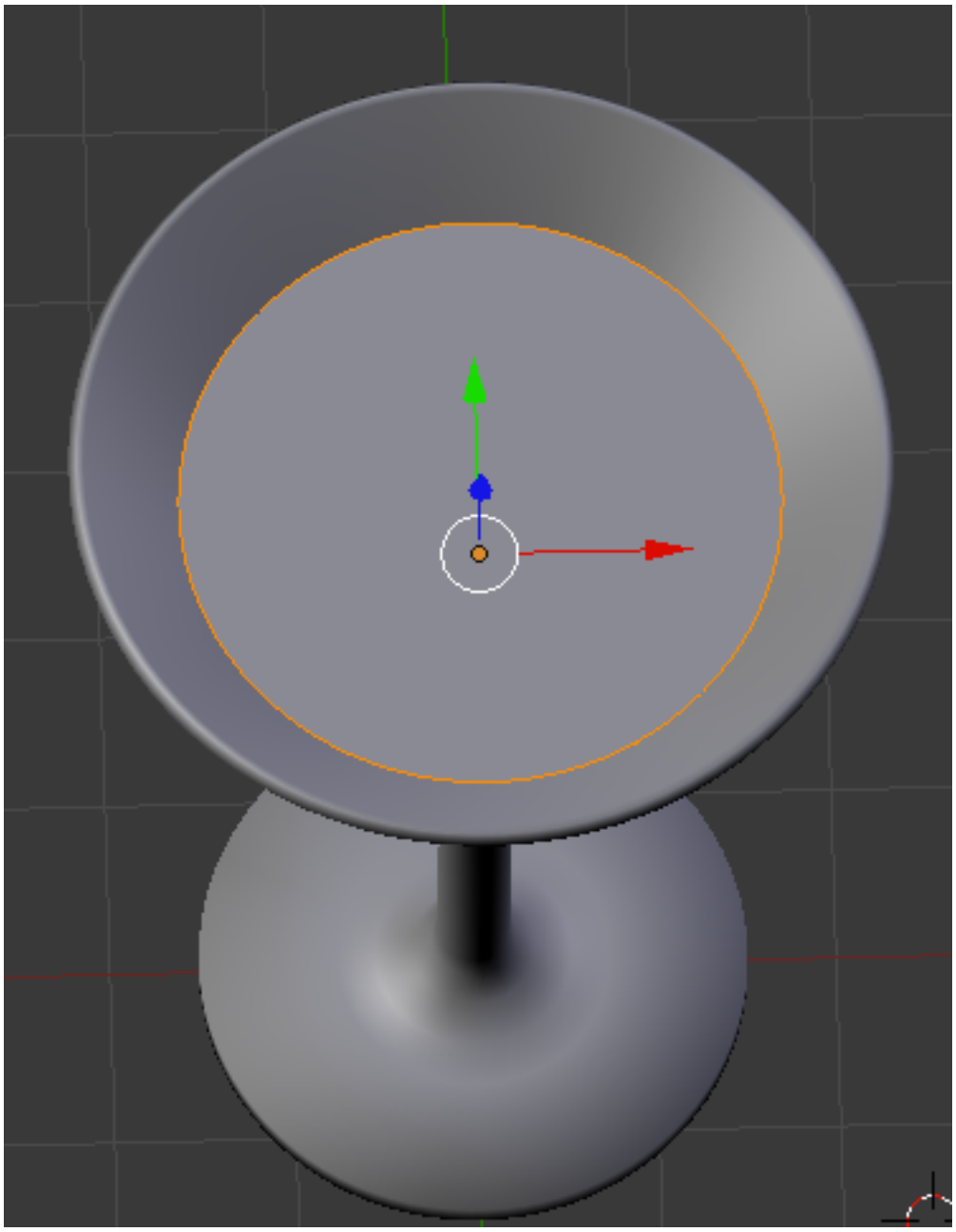


Raise the vertices and scale them as shown below.



With the top set of vertices selected, press SHIFT-F. This will fill the top of the gin object with faces.

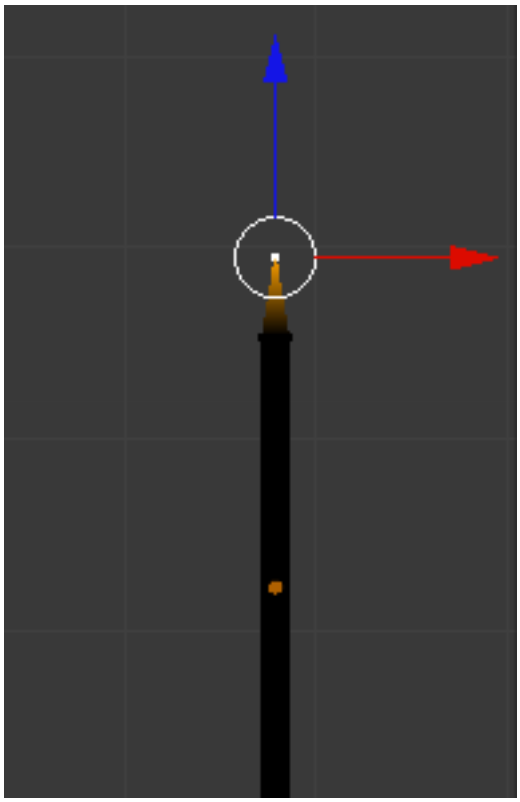
TAB out of edit mode. With the gin object selected, press the object button on the 3D editor header and transform / Origin to Geometry.



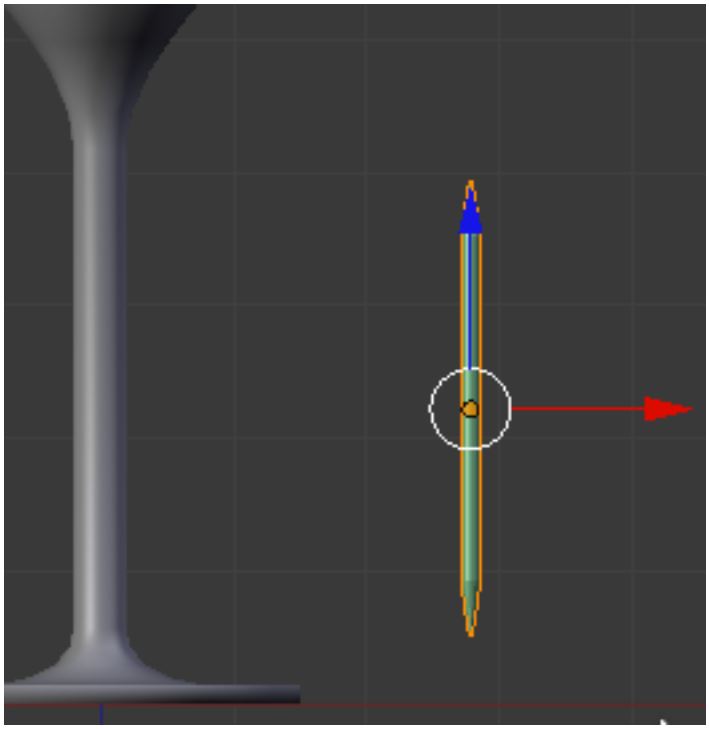
The Toothpick and olive:

Next we will model the toothpick and olive. Go to top view. Place your 3D cursor to the side of the glass and add a capped tube object.

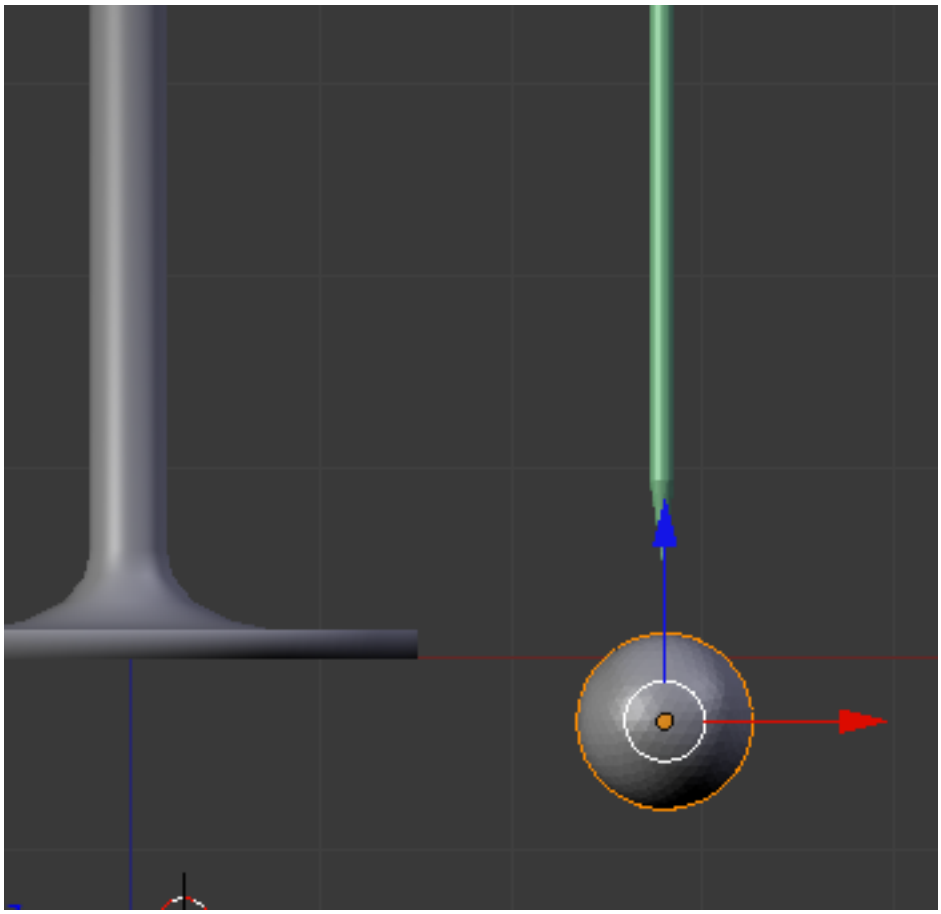
Scale the tube object down quite a bit (I scaled mine down to .066). Go to front view. Scale the object up along the Z Axis a bit . TAB into edit mode, Select the top vertices and extrude them up a bit. Press CTR-V (vertex menu) and merge the vertices to a single vertex as shown below.



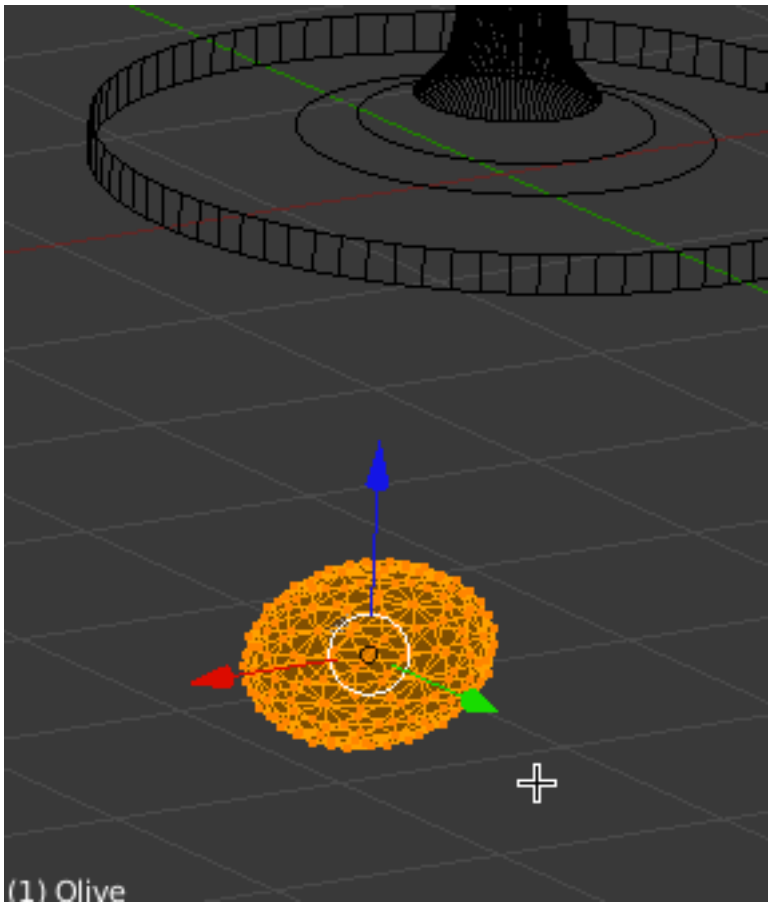
Do the same on the other side. TAB out of Edit mode. Set the origin to the center of the geometry. Name this object “Toothpick”



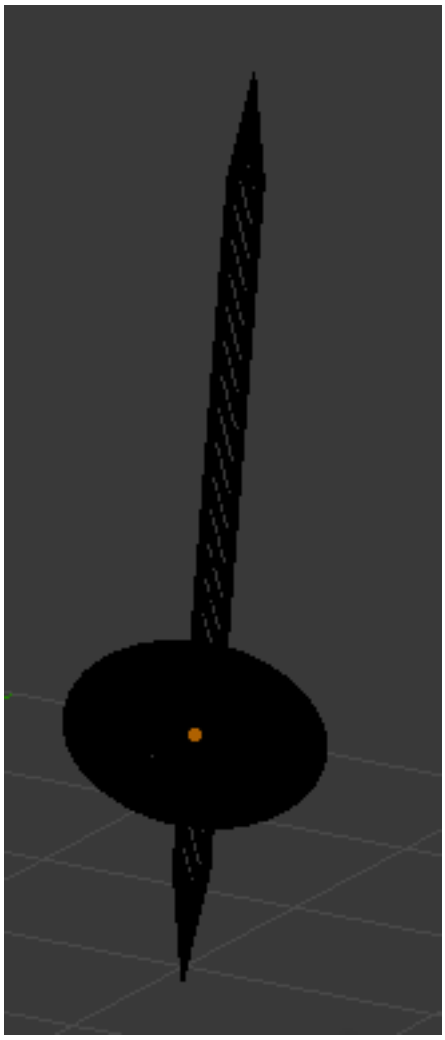
Go to top view. Add a icosphere object. Set the subdivisions at 4. Scale the icosphere object to about the side of an olive (proportional to the glass and toothpick)



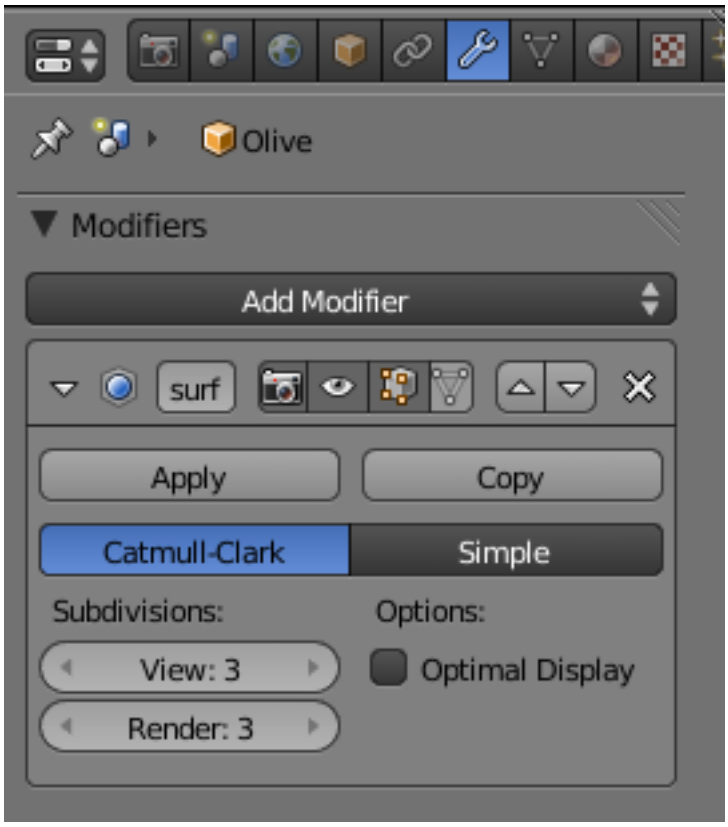
In front view, scale the icosphere down a bit along the Z Axis and in side view scale it down a bit along the Y Axis to give it an olive shape.



Name this object “Olive”. Place the olive on the toothpick object.

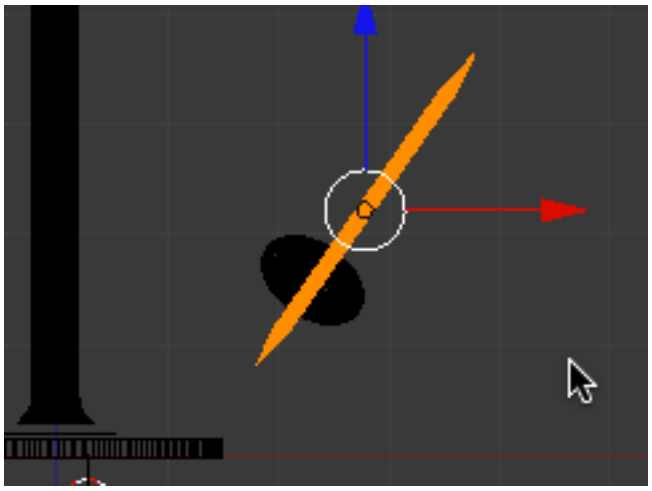


With the olive object selected, click on the modifier context icon in the Properties panel and add a subdivision surface modifier. Set the display and render levels to 3

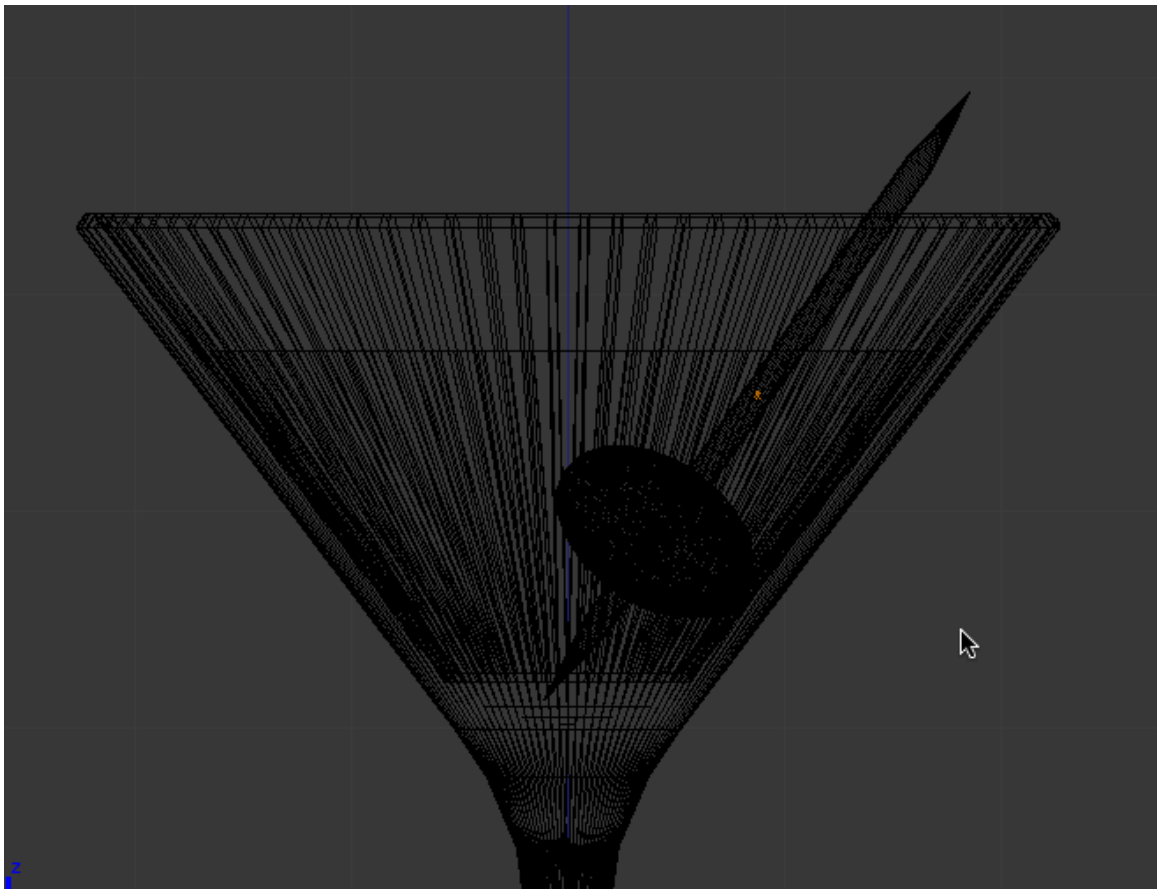


Select the olive object and then add the toothpick object to the selection. Press CTRL-P (parent) and parent the olive to the toothpick.

Select the toothpick and rotate it around the Y Axis 35 degrees (the olive will follow).



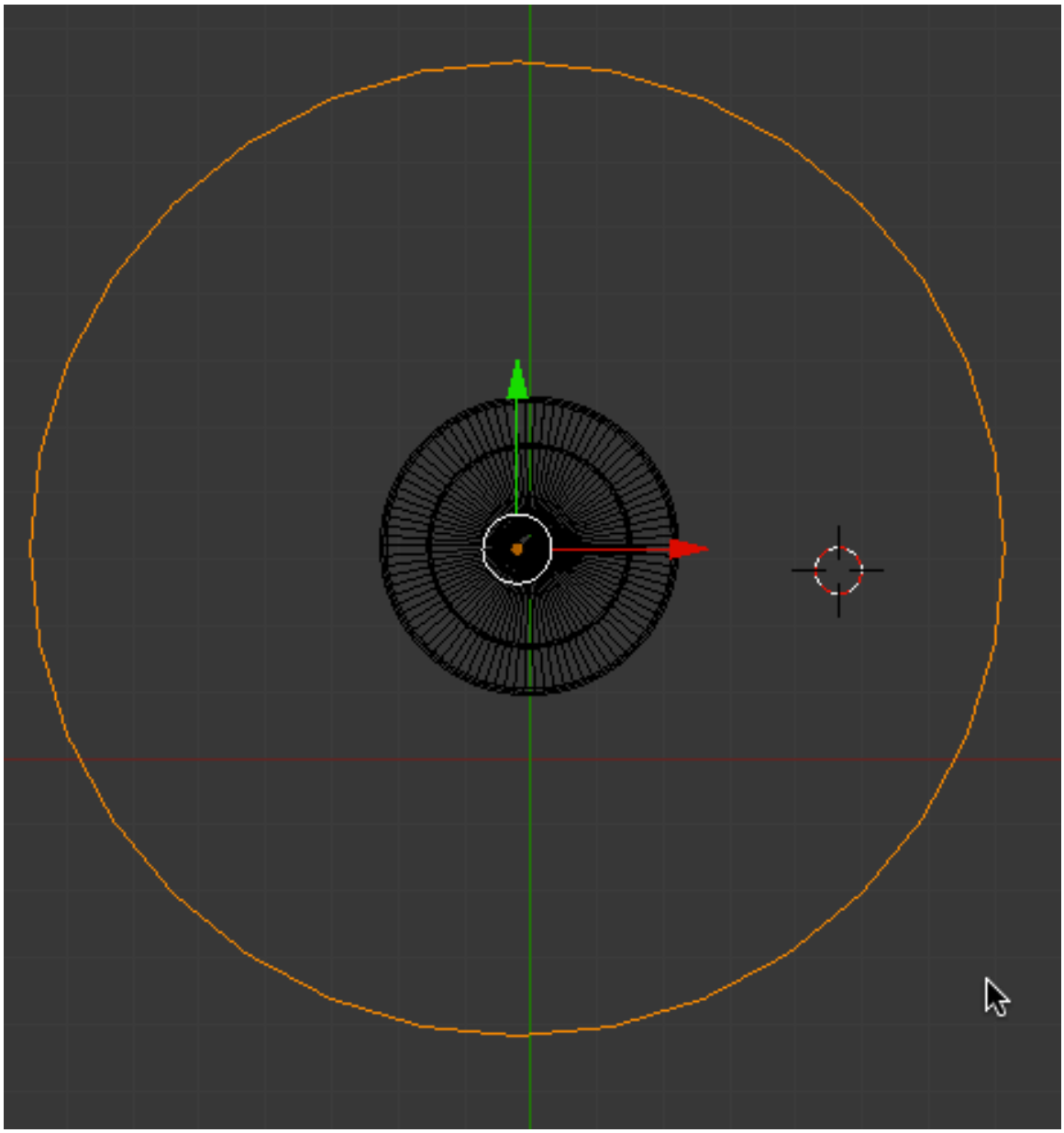
Place the toothpick and olive into the martini glass so that it look like below in front view.



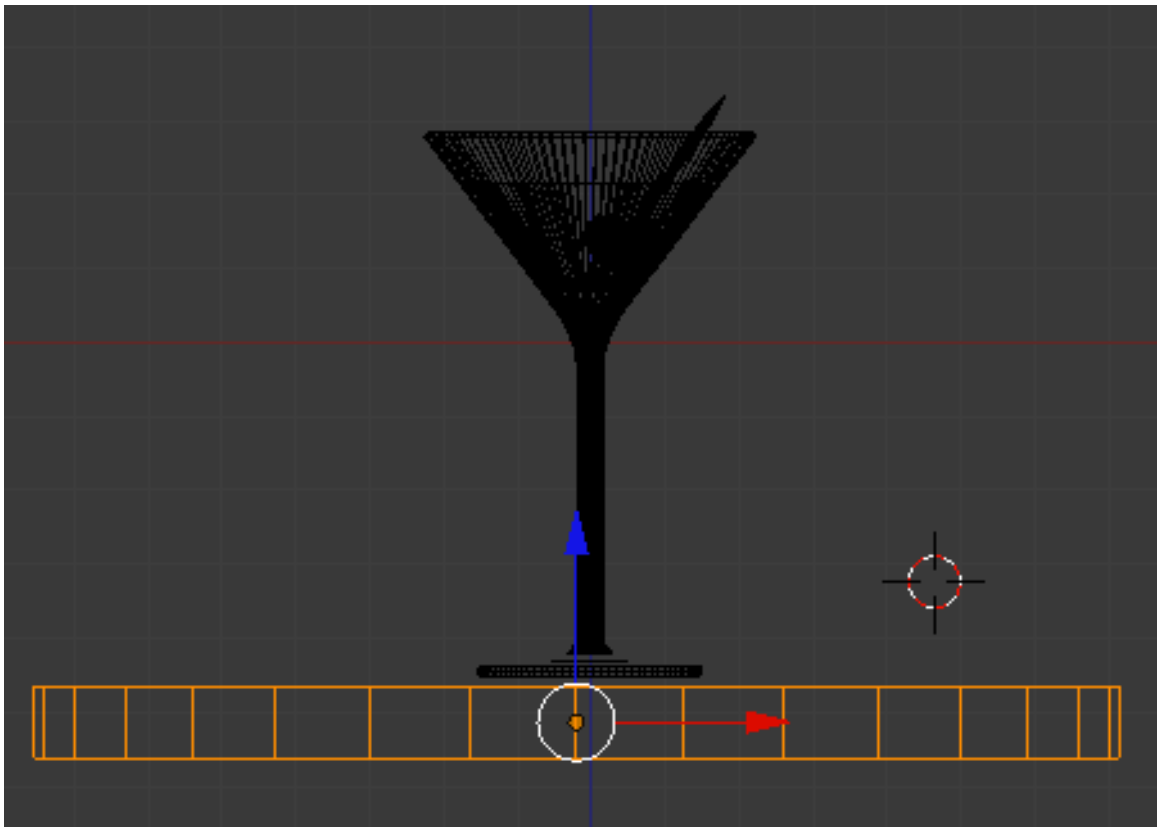
Check from side view to make sure the toothpick and olive are inside the glass.

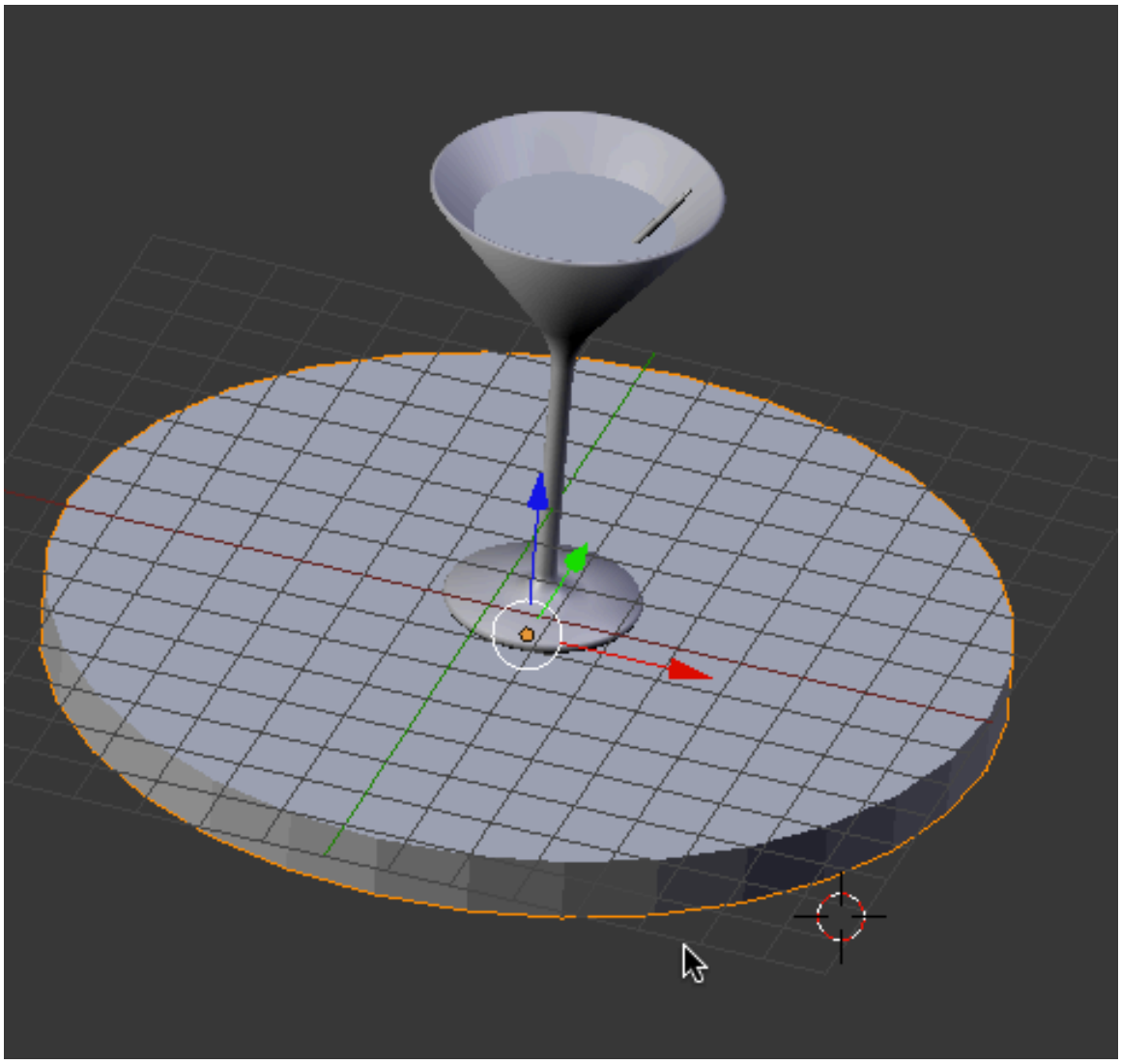
The Table:

Go to top view. Place your cursor in the center of the glass. Add a capped tube object. Scale it up as shown below.



Go to front view. TAB into edit mode. Select the bottom vertices and raise them up along the Z Axis to give the tabletop some thickness. TAB out of edit mode. Name this object “Table”. Position the table as shown below.

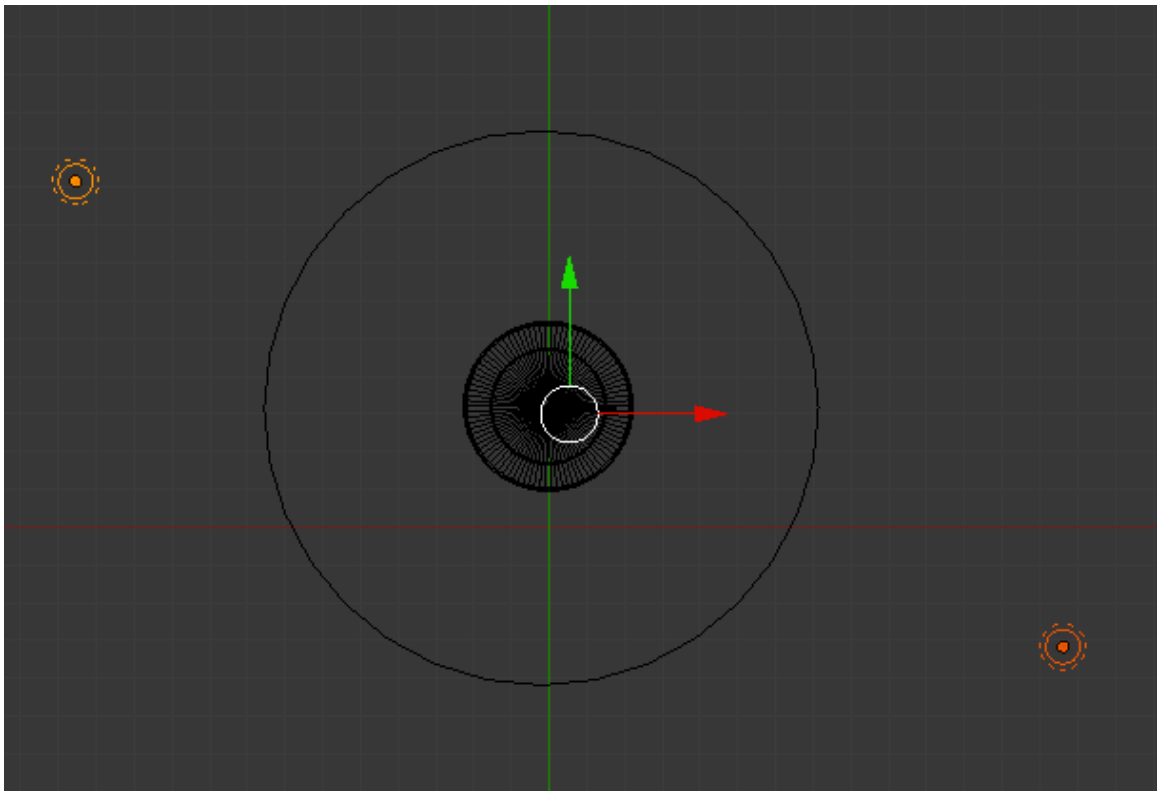




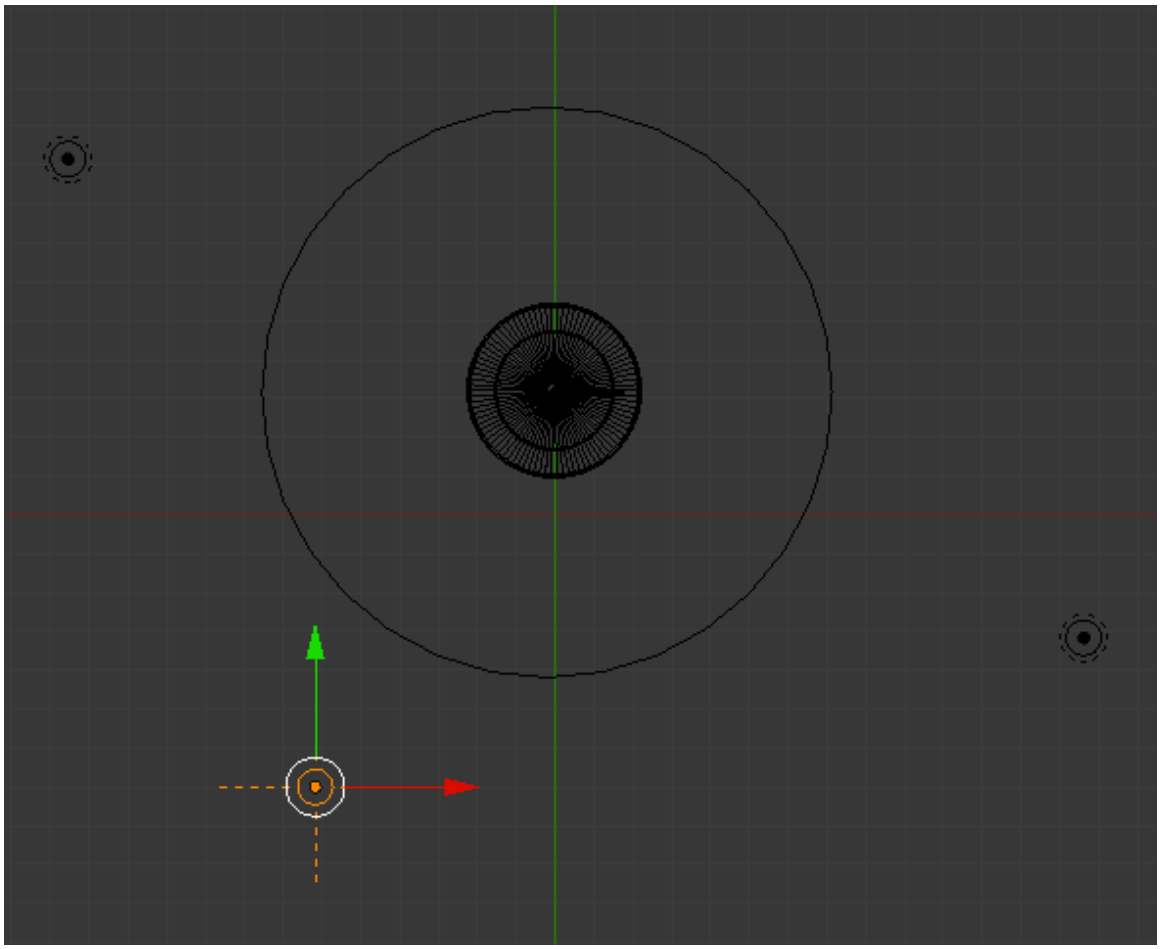
Lighting:

Go to top view.

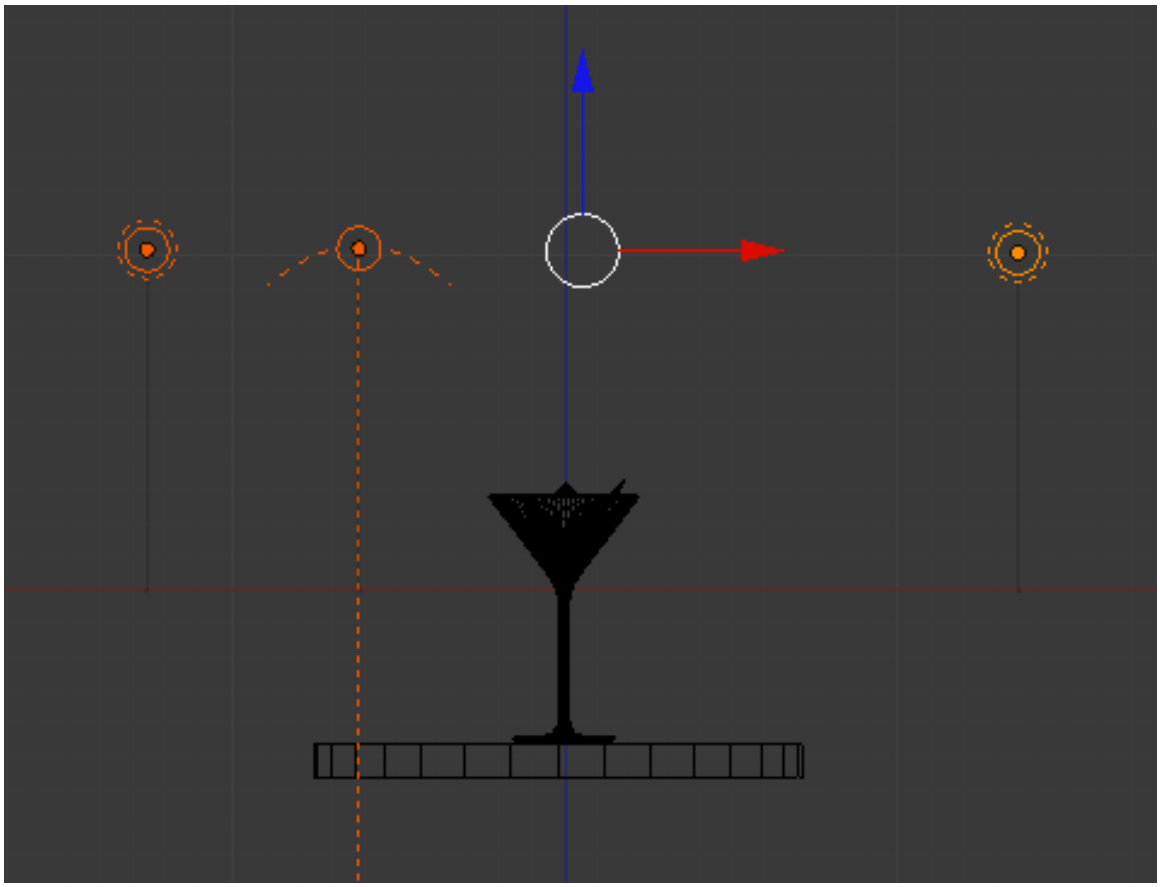
Add two point lamps as shown below.



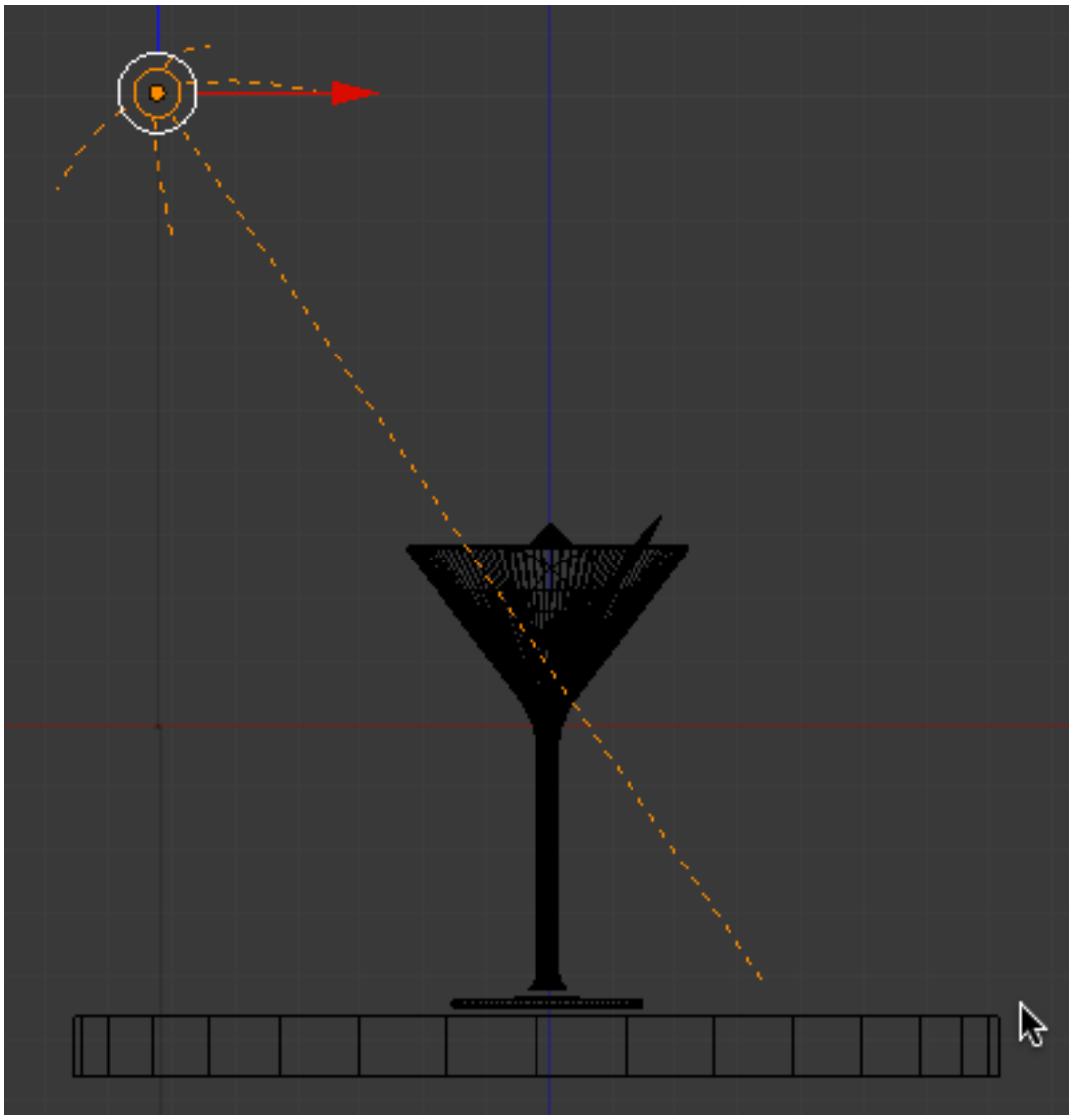
Add a Hemi Lamp as shown below.



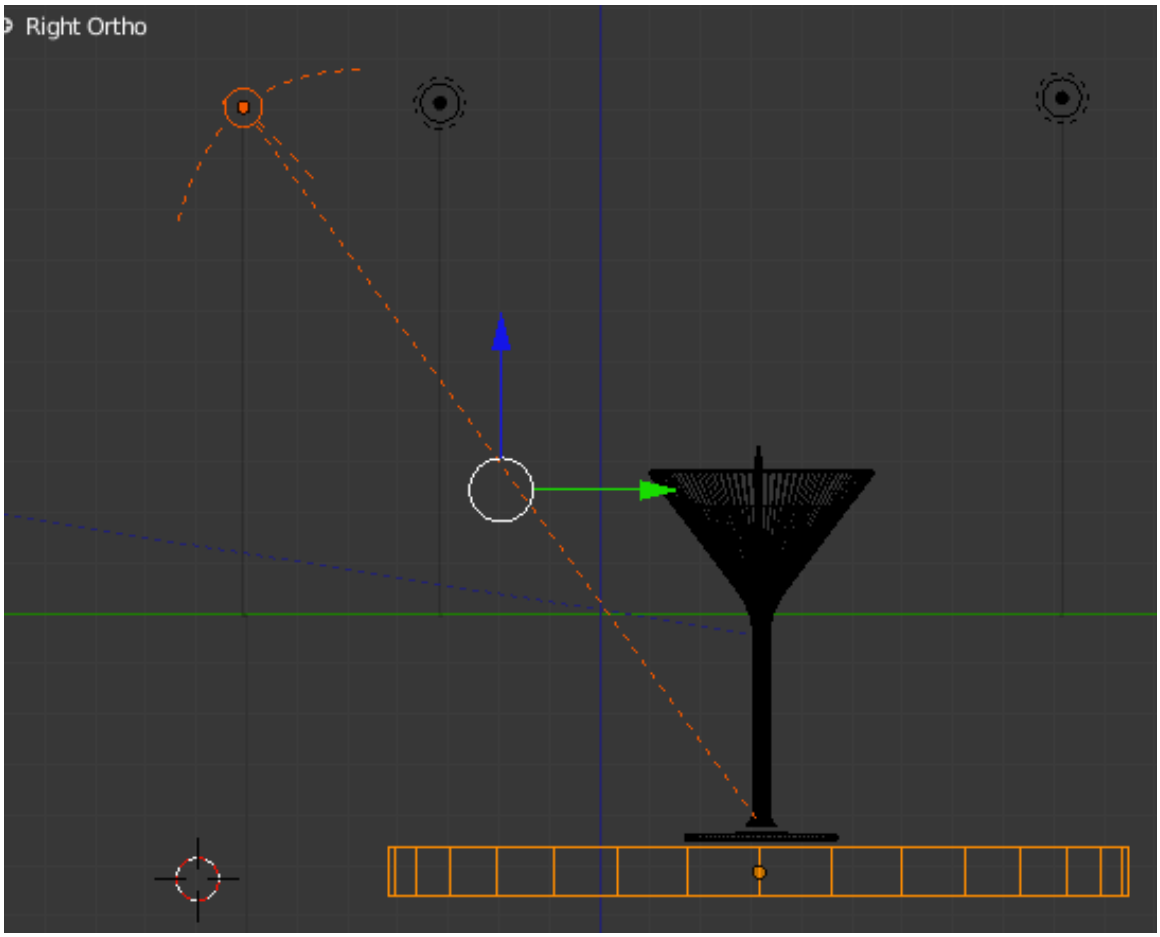
Go to front view and raise the 3 lamps up along their Z-Axis as shown below.



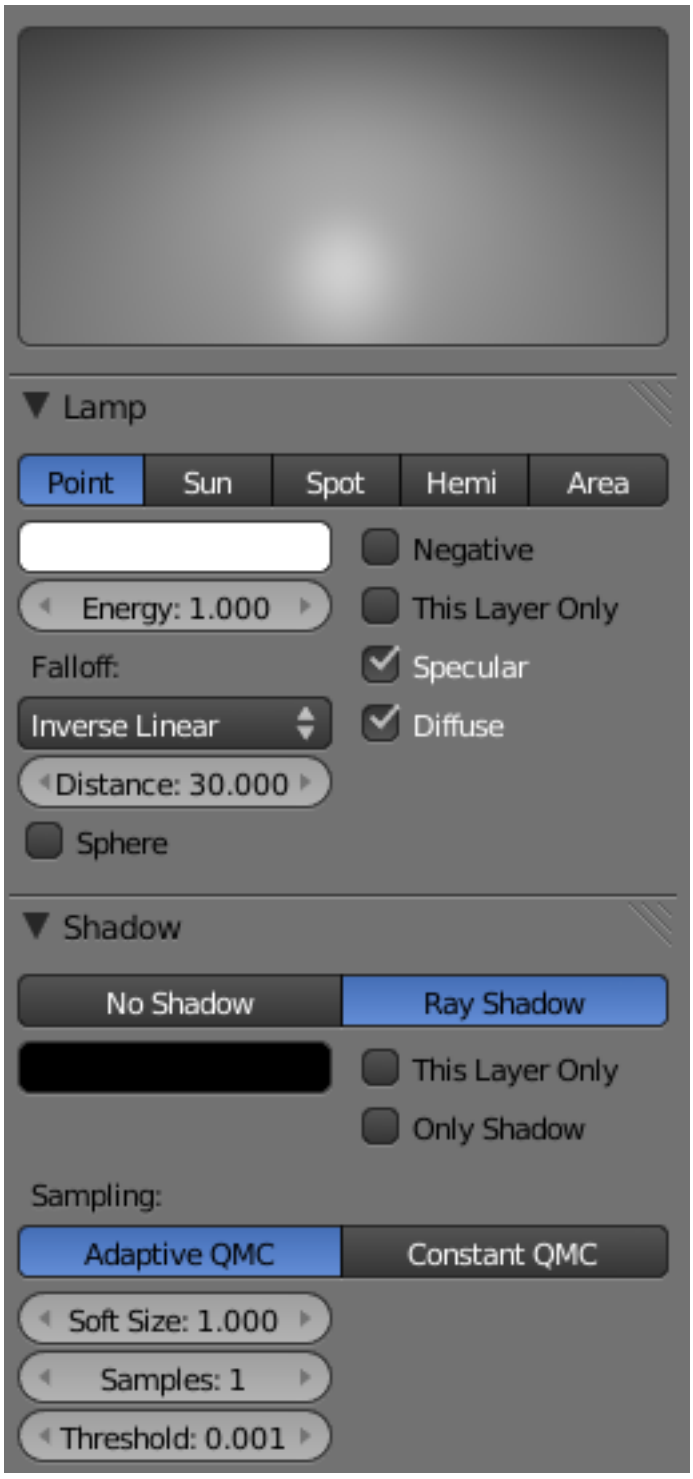
Select the Hemi lamp and go to front view. Rotate the lamp so it is directed at the martini glass as shown below.



Go to side view and rotate it again so it is pointing at the martini glass.



In front view, select the point lamp on the far left and change the falloff from Inverse Square to inverse linear. This will limit the falloff of what is essentially going to be a backlight. Set the distance to 30 and select Ray Shadow.

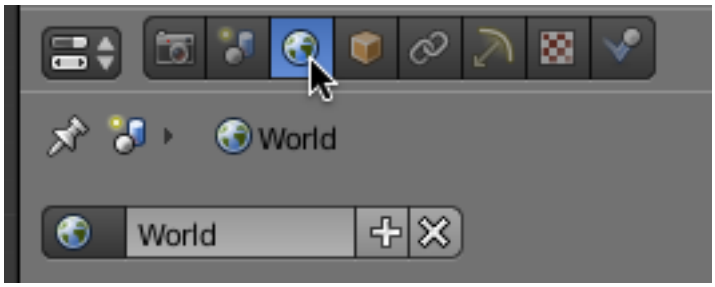


Select the other point lamp and set the shadow to ray shadow. This will be used as a fill light.

The key light will come mostly from the hemi lamp.

The World:

Click on the World context button in the properties panel.



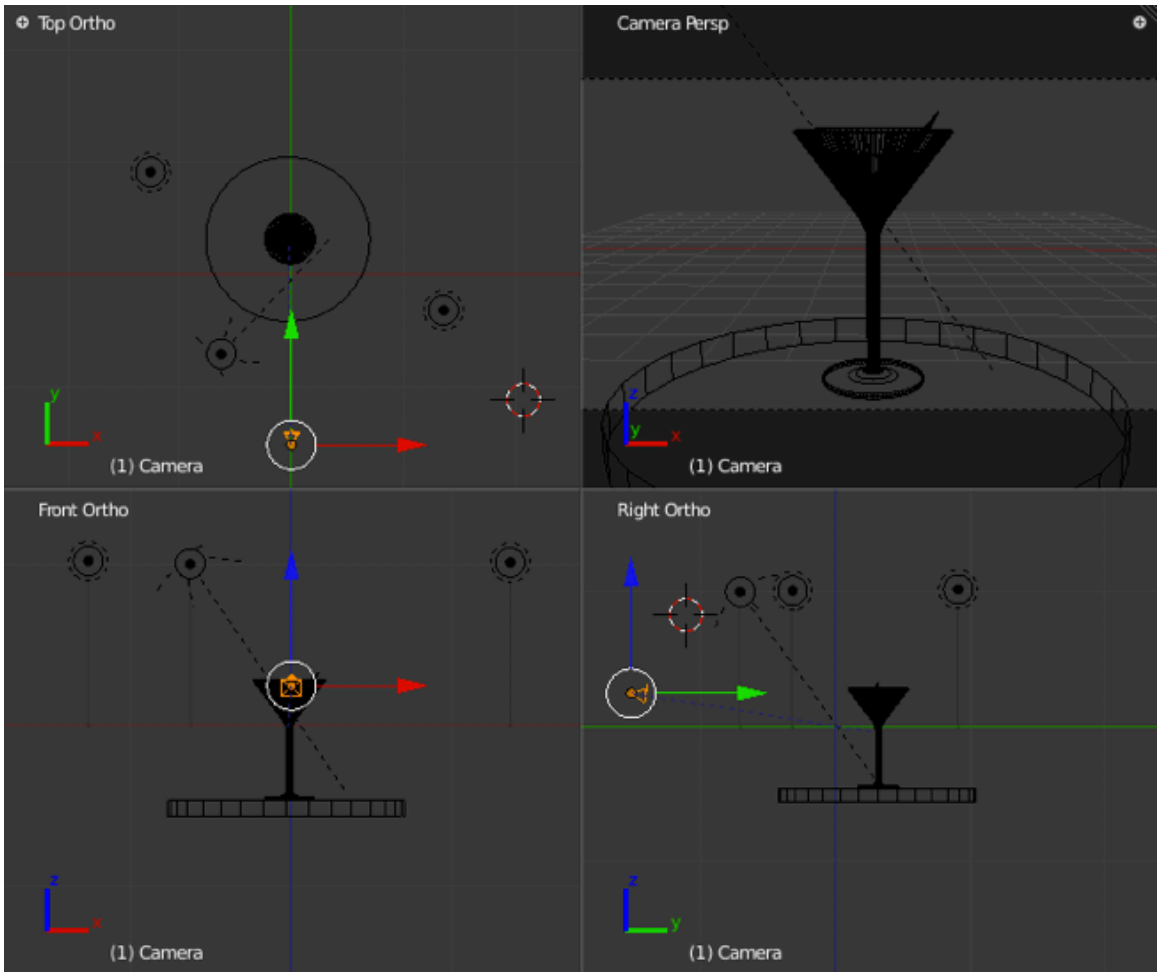
Set the Blend Sky. Set the Horizontal Color swatch to R=.2, G=.2 and B=.5
Leave the Zenith at black.

Camera and Camera Focus:

Go to top view. Add an empty object to the scene. Name the empty object "Camera Focus Empty". Select the Camera object. Press the Constraint context icon in the Properties panel and add a "Track To" constraint. Set the object of the camera constraint to the camera focus empty. Set the "To" to –Z and the "Up" to Y.

This will constrain the camera to “look at” the camera focus empty object. Place the camera empty object in the middle of the martini glass.

Press CTRL-ALT-Q and go to quad view. Move the camera so that the camera view is as shown below.



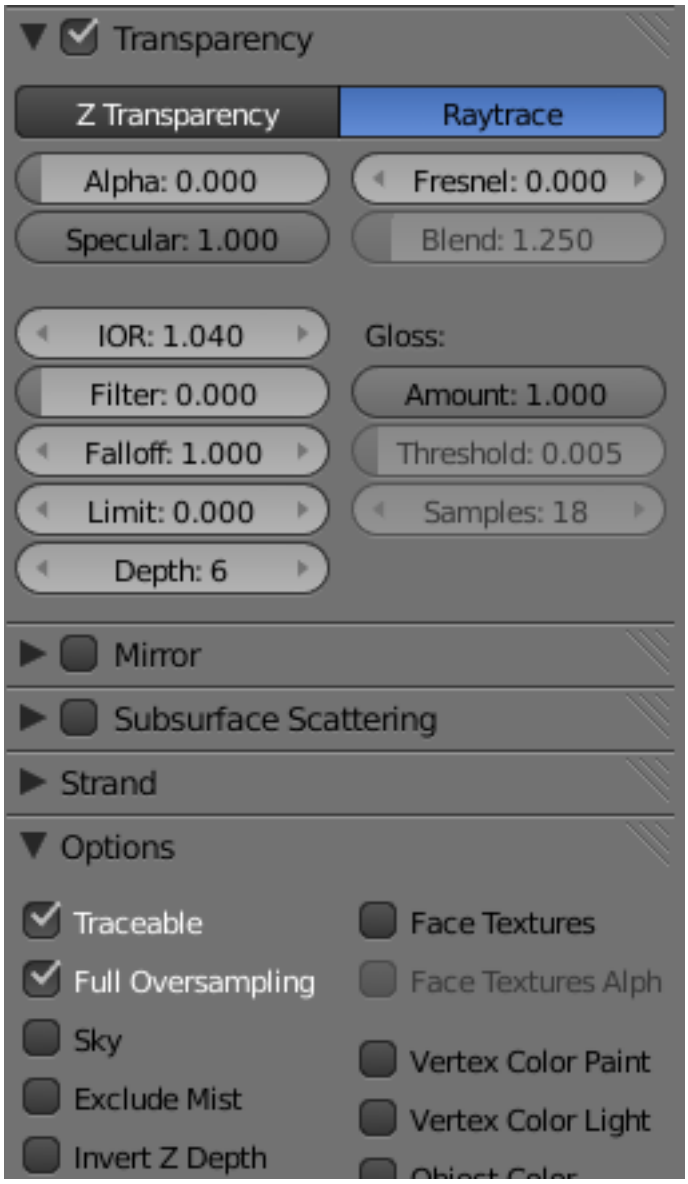
Render the scene (F-12).

Materials and Textures:

Select the glass object. Press the Material context icon in the Properties panel, which will display the materials editor. Add a new material. Name this material “Martini Glass”.

We will leave the default diffuse and specular settings. Scroll down to the transparency panel. Check the Transparency checkbox. Select Raytrace transparency and set the Alpha to 0. Set the IOR (Index of refraction) to 1.04 and the Depth to 6.

In the Options panel, check the “Full Oversampling”.



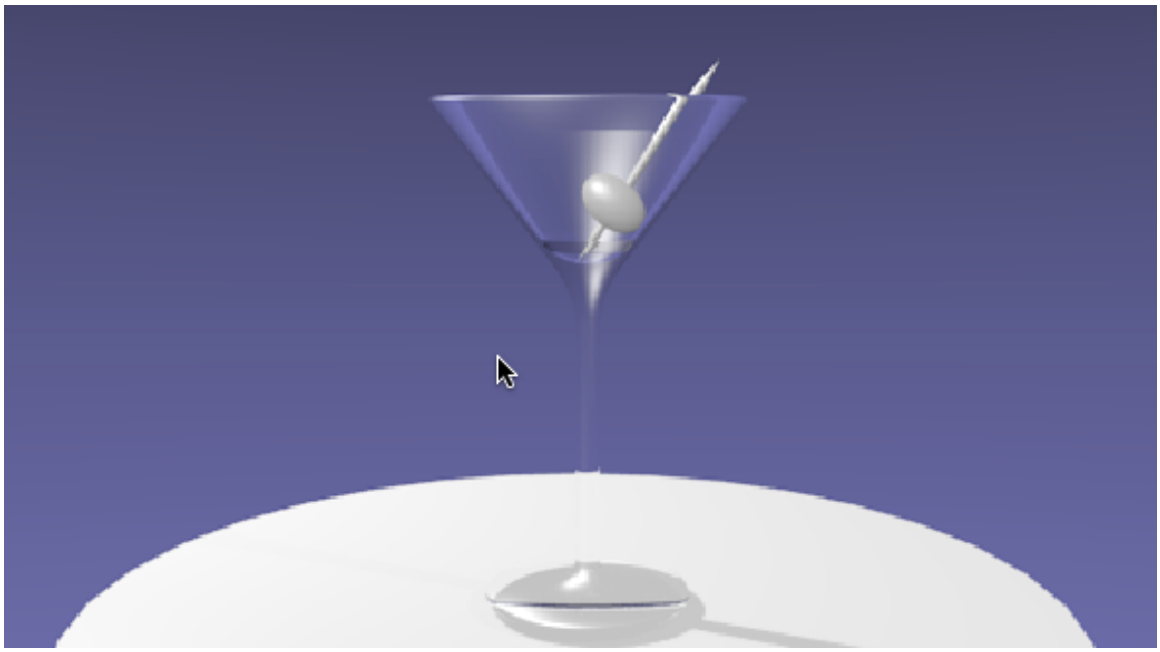
Raytrace is one of the two Blender transparency tools. Setting the Alpha to 0 makes the object transparent. The IOR distorts faces behind the glass and the Depth allows us to see through multiple layers of transparency.

Render the scene.

Select the gin object. Go to the material editor and add a new material and name it “Gin”.

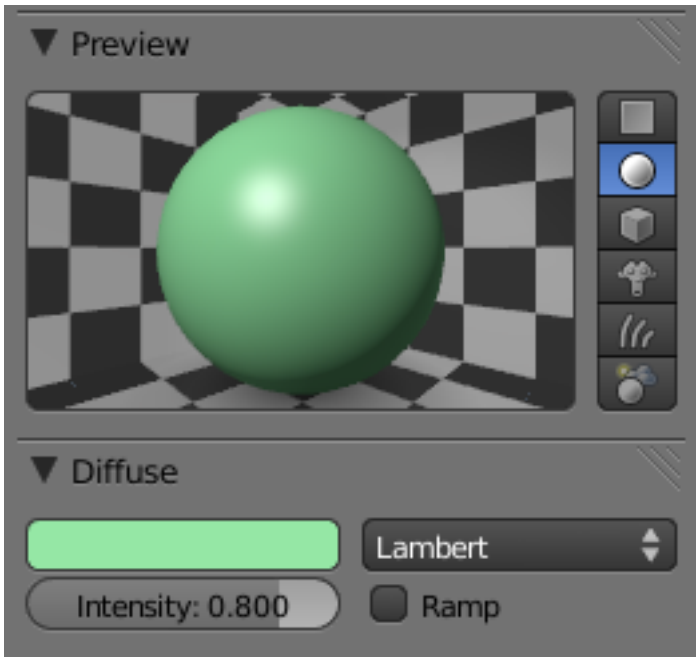
We will leave the default diffuse and specular settings. Scroll down to the transparency panel. Check the Transparency checkbox. Select Z transparency and set the Alpha to 0.

Render the scene.



Select the toothpick. Go to the material editor and add a new material. Name this material “Toothpick”.

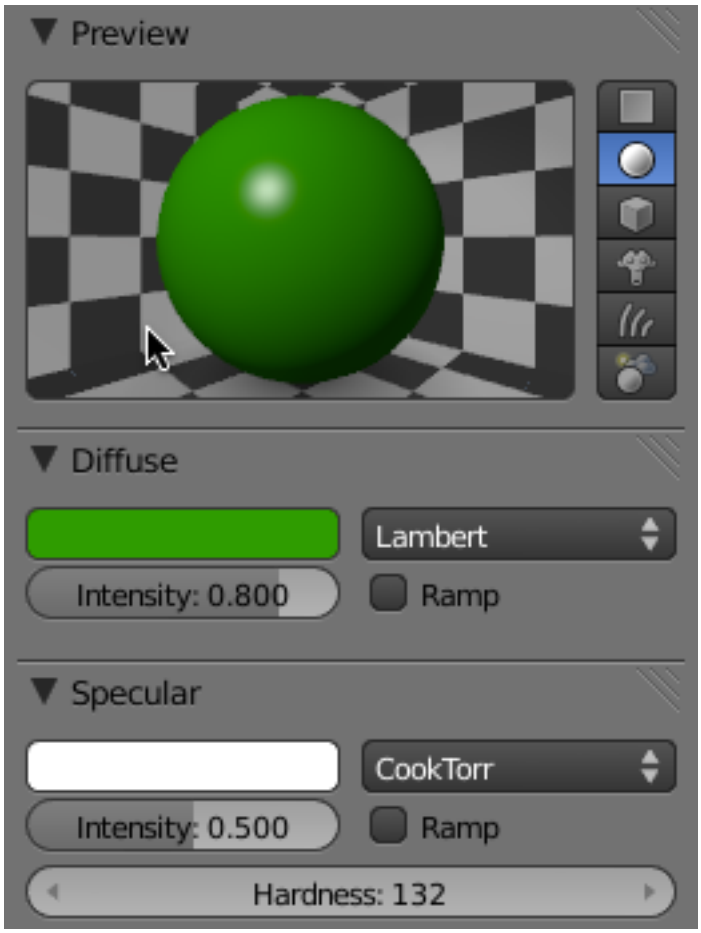
Click on the diffuse color swatch and set the color to a light beige. I used R=.29, G=.8 and B=.41



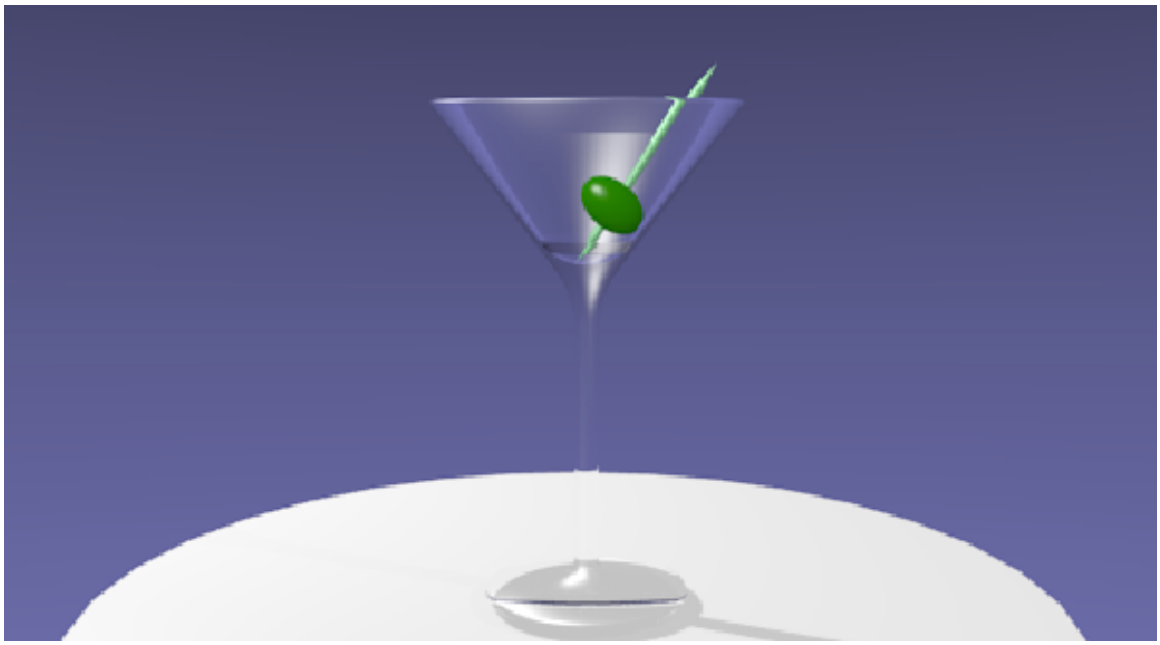
Select the olive object. Go tot the material editor and add a new material. Name this material “Olive”.

Click on the diffuse color swatch and set the color to an olive. I used R=.02, G=.3 and B=.01

Set the specular hardness to 132.



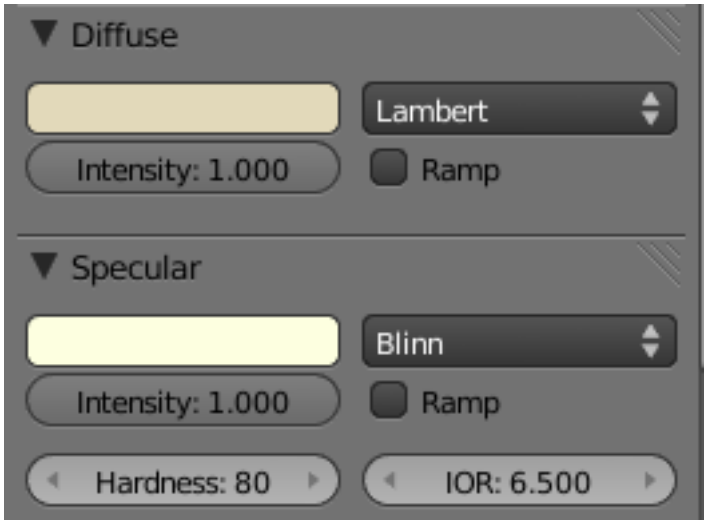
Render the scene.



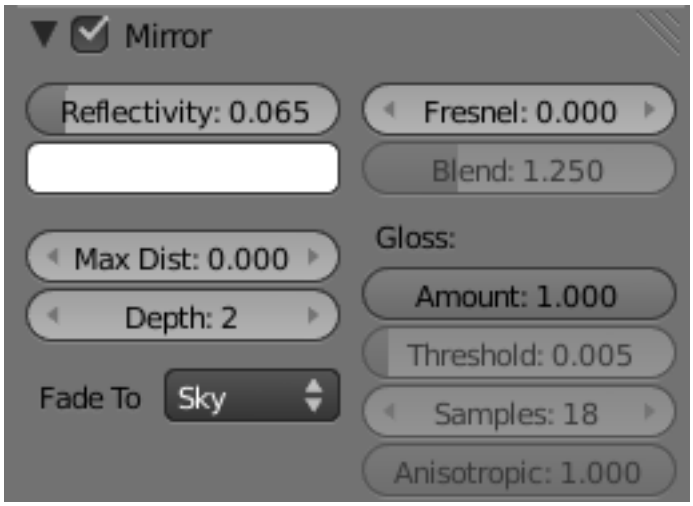
Select the table object. Go to the materials editor and add a new material. Name this material “Tablewood”.

Set the diffuse color to R=.76, G=.69 and B=.51 Set the diffuse intensity to 1

Change the specular shader to “Blinn”. Set the specular color to R=.99, G=1 and B=.77 Set the specular intensity to 1. Set the hardness to 80 and the IOR to 6.50



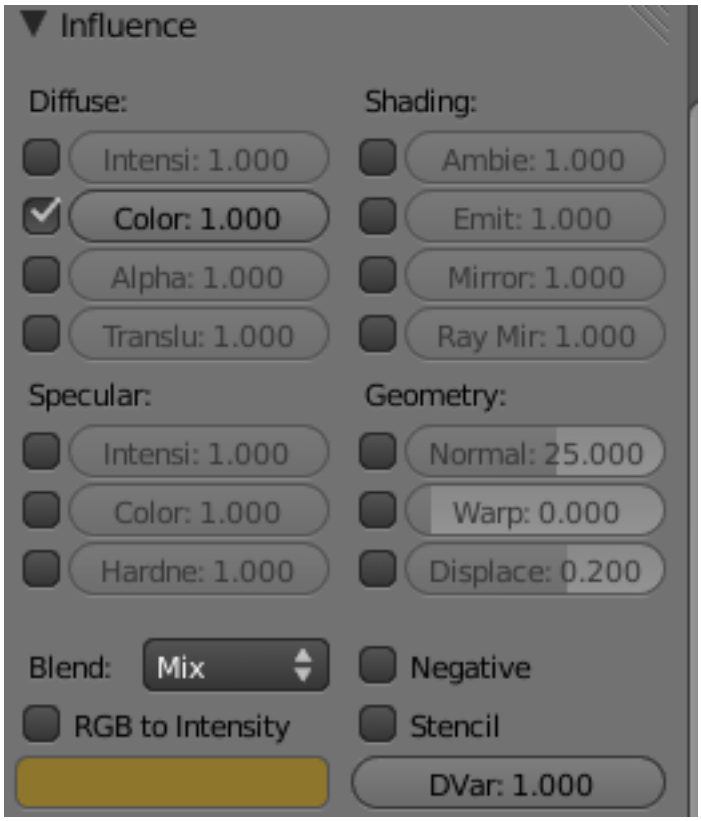
We will add a slight amount of mirror reflectivness to the table. Checkmark the Mirror checkbox and set the reflectivity to .065



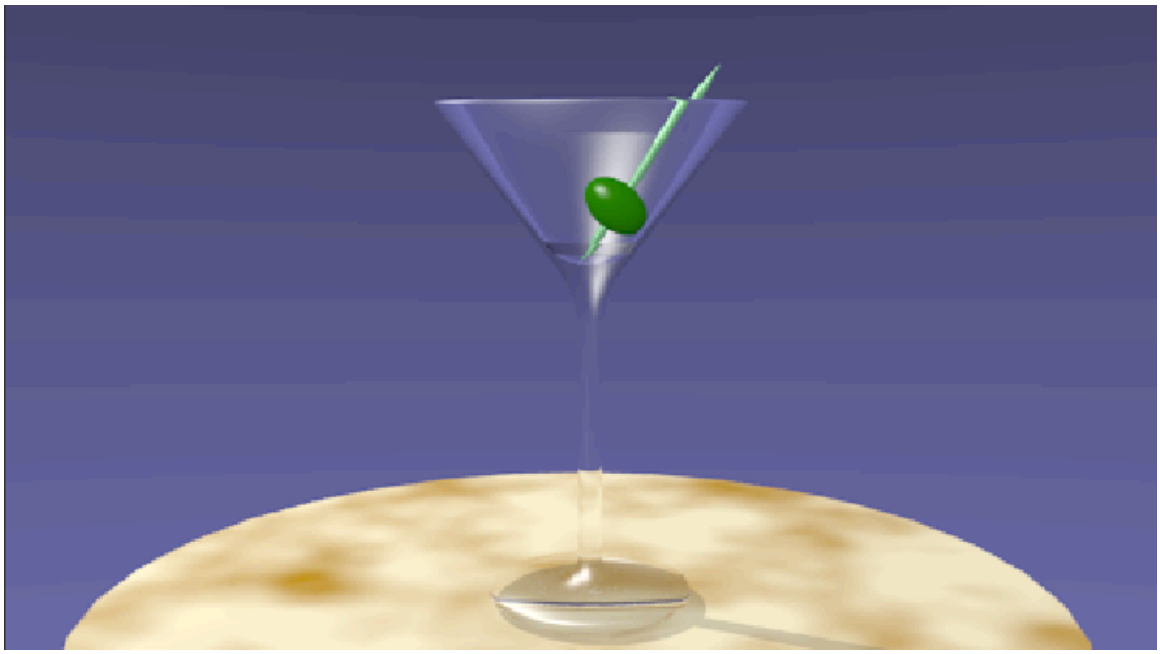
Click on the Textures context icon in the Properties panel, which will display the textures editor. Add a new texture. Name this texture “Surface Variation”.

We will use the default clouds procedural texture. Adjust the settings as shown below.

The cloud procedural texture returns a mottled variant pattern. By default, with the influence set to the diffuse color, it will return this variant pattern in shades of blue green. Click on the color swatch at the very bottom of the Influence panel as set the color to R=.4, G=.2 and B=0

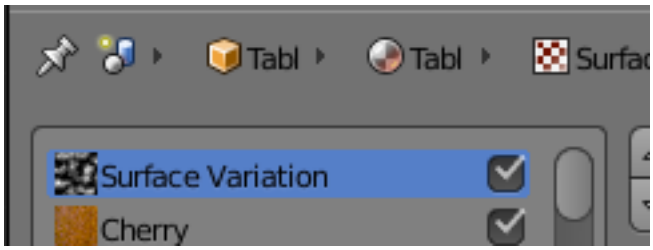


Render the scene.

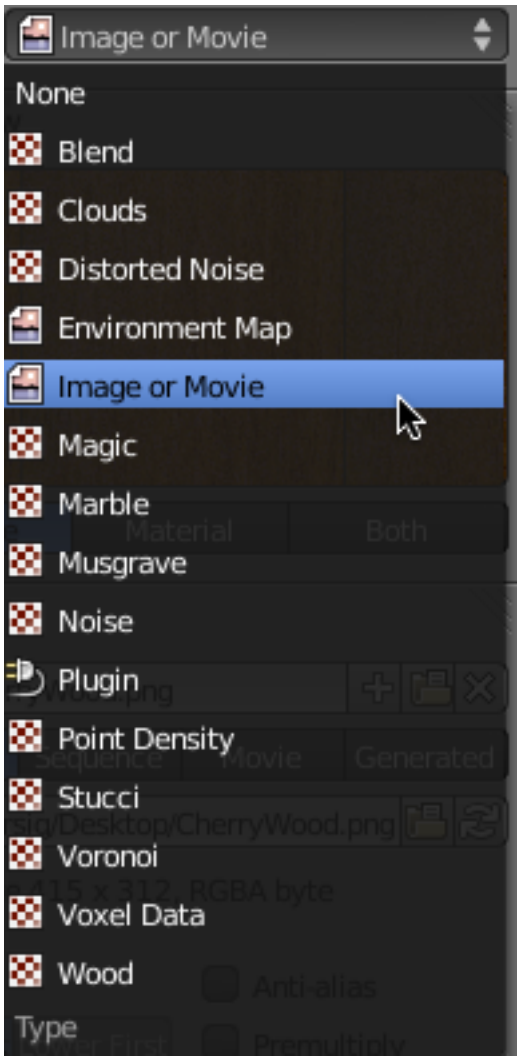


We will be adding 2 image textures to the table object. These two images are "CherryWood.png" and "Doily.png". These files can be downloaded HERE.

Click in the second texture slot and add another new texture. Name this “Cherry”

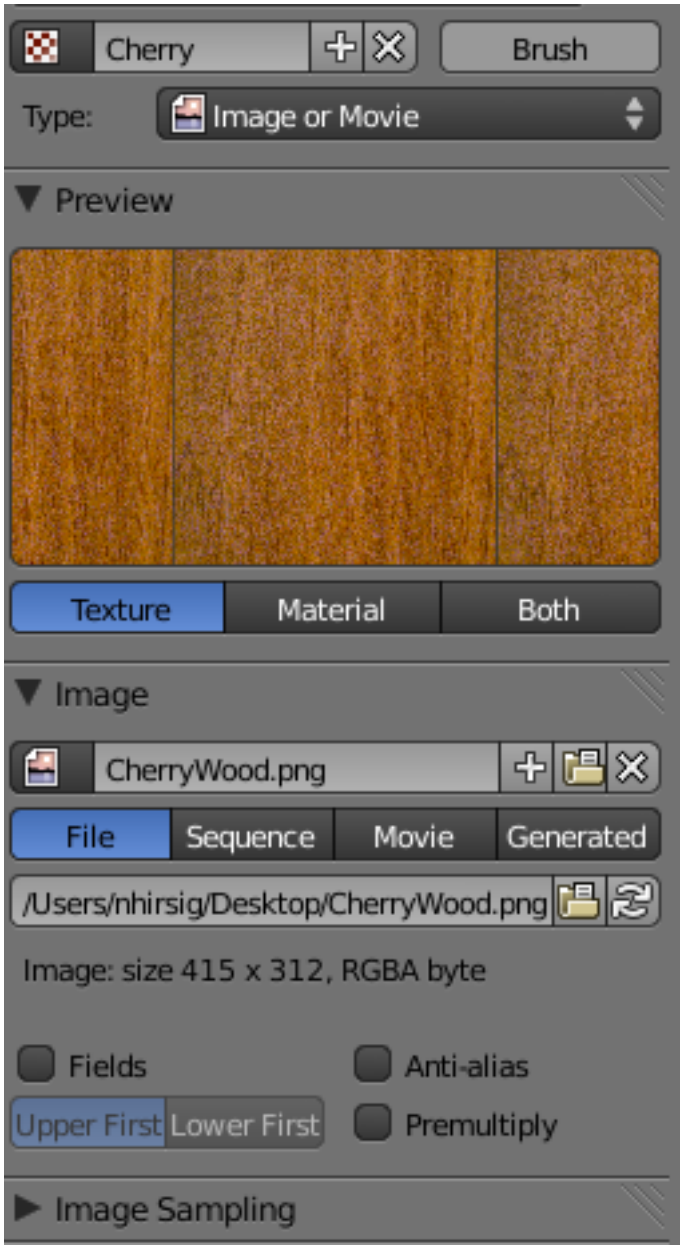


Click on the type dropdown box and select “Image or Movie”.



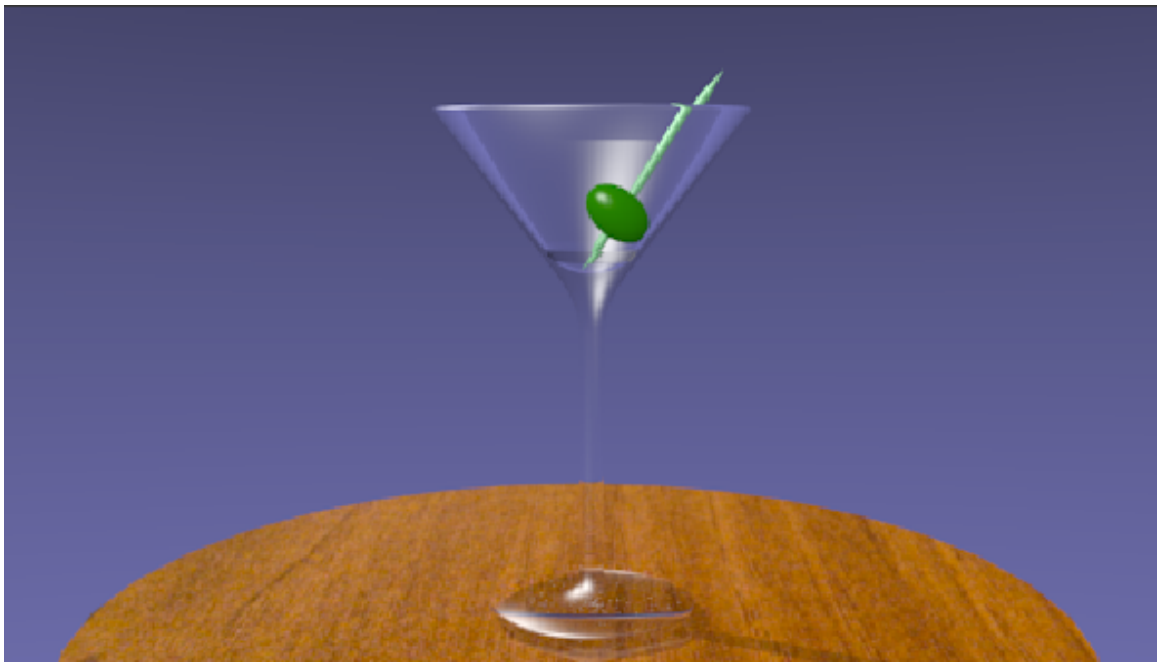
Click on the “Open” button. This will display Blender’s file browser. Locate the CherryWood.png image file, select it and click on the open button.

This will display the image file in the preview window.



We will leave all of the default settings.

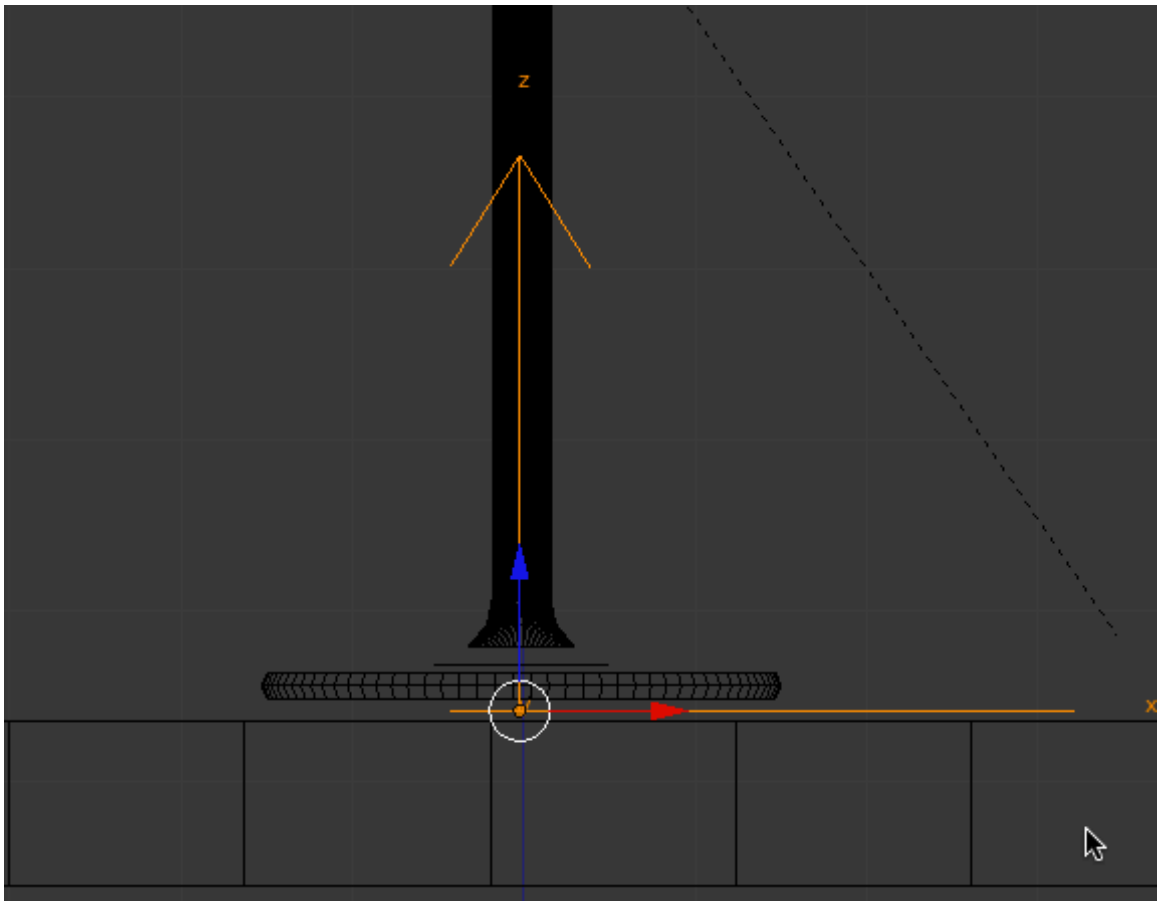
Render the scene.



Next, we will add a decal image to the table. To place the image we will need to create an empty object.

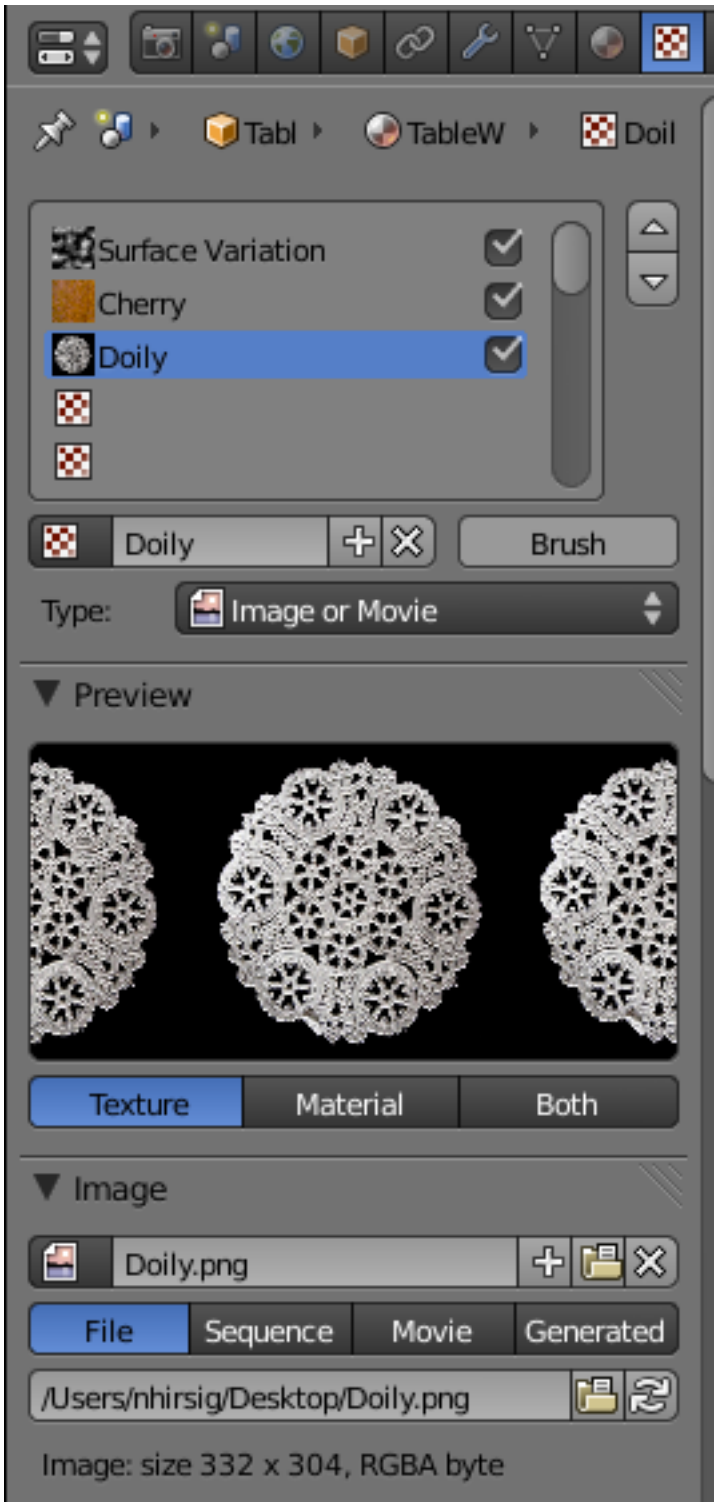
Go to top view. Place your cursor in the center of the martini glass and add an empty object. Name this empty object “Napkin Empty”.

Go to front view. Place the napkin empty object just above the table and just below the martini glass. Scale the empty up as shown below.



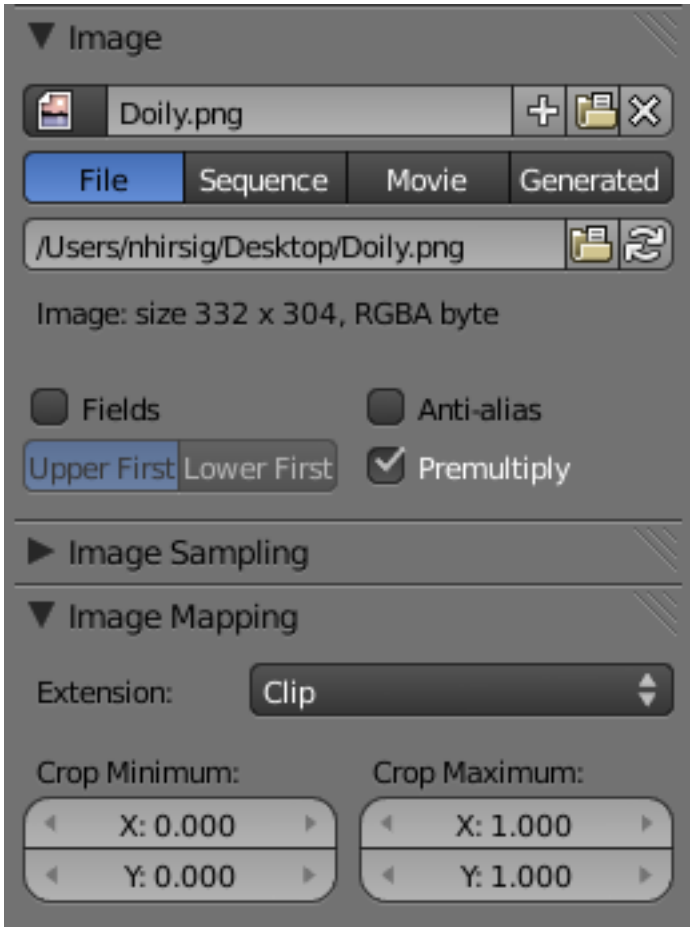
Make sure that the empty's local Z direction is facing straight up.

Select the table object and go back to the Texture editor. Select the third texture slot and add a ne texture. Name this texture "Doily".

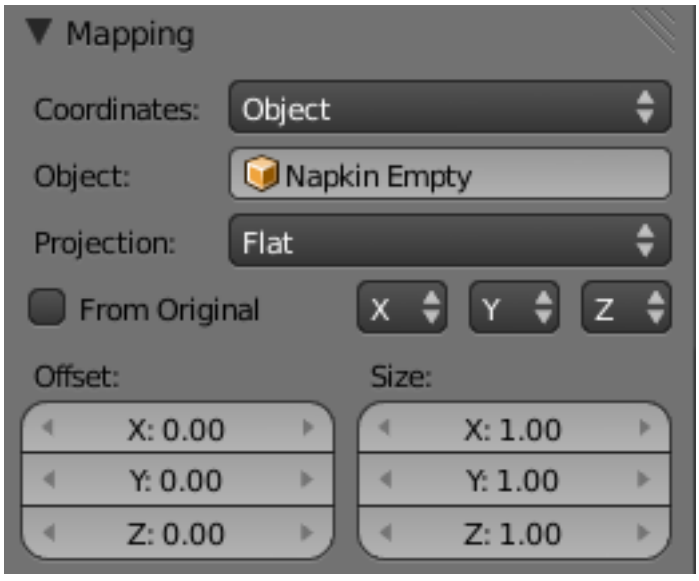


In the Image panel, checkmark the “Premultiply” checkbox. We need to do this because this .png image has a transparent background.

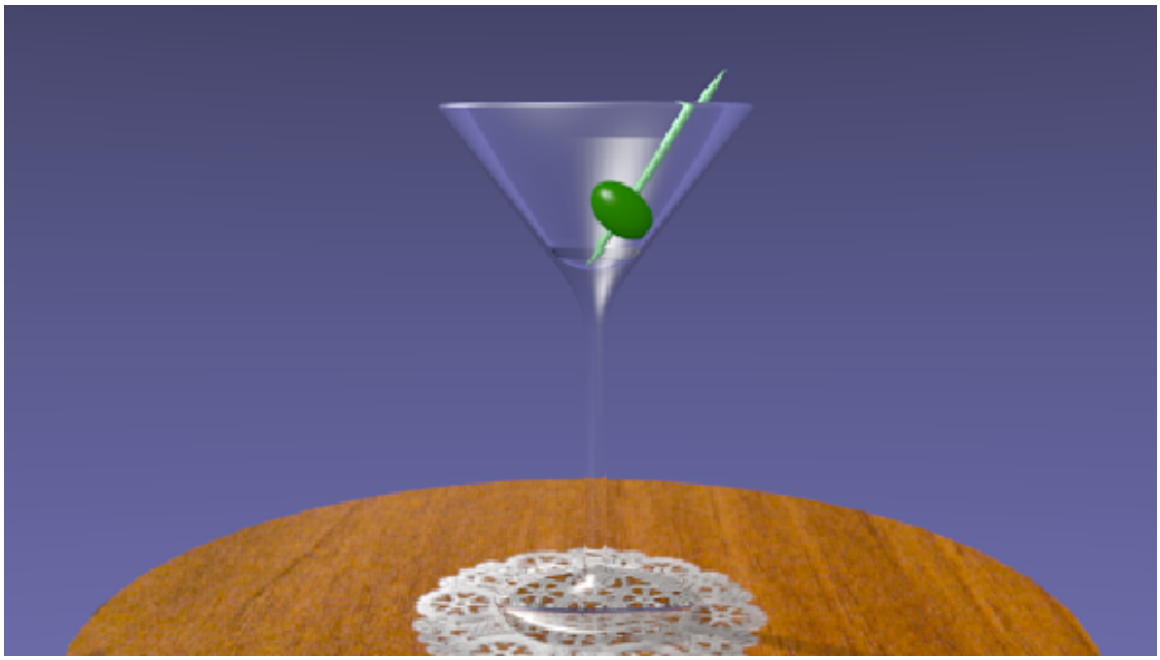
In the Image Mapping panel change the extension from repeat to clip. This will stop the image from tiling, so we will see only one doily.



In the Mapping panel, change the coordinates from generated to object. Click in the object box and select the napkin empty as the coordinates for the doily image mapping.



Render the scene.



The doily image should be displayed at the location of the napkin empty object. You may have to scale the empty up or down to get the right size display of the image. Also make sure that the napkin empty is above the tabletop and below the glass and that the local Z Axis is pointing straight up.

A copy of the completed .blend file, named “Martini_Complete.blend” can be downloaded HERE.