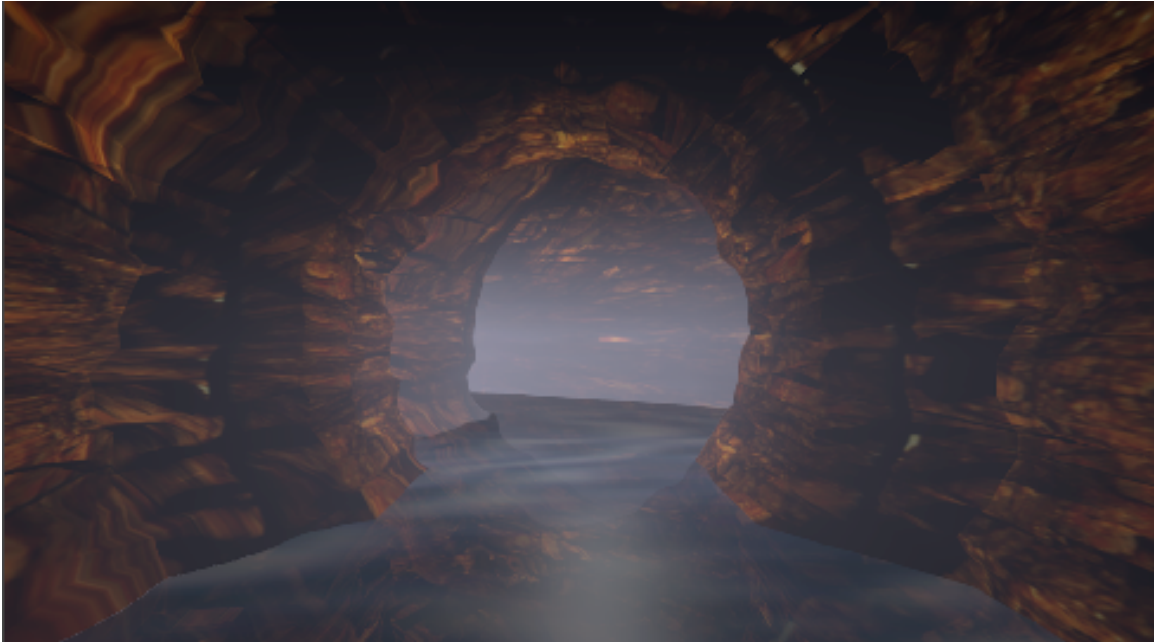


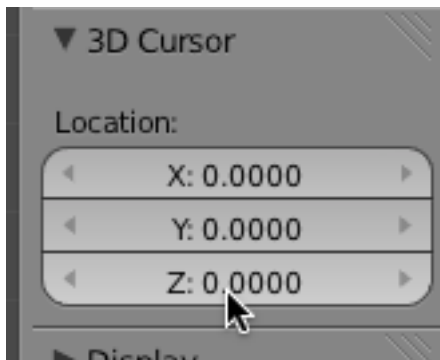
Course: 3D Design  
Title: Cave  
Blender: Version 2.6X  
Level: Beginning  
Author; Neal Hirsig ([nhirsig@tufts.edu](mailto:nhirsig@tufts.edu))  
(May 2012)

## Cave



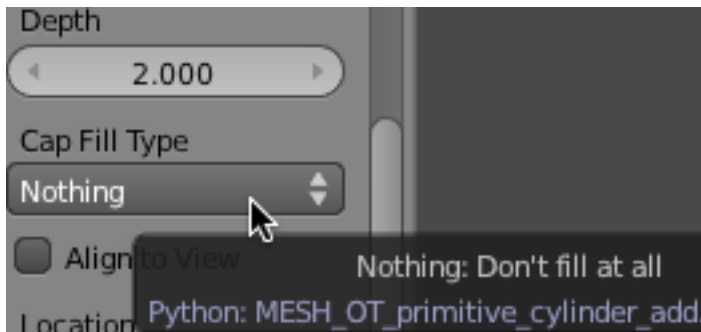
Open Blender Select the default cube and delete it. **Go to Front View.** Press NUMPAD-5 if you are in Perspective mode to switch to orthographic mode.

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

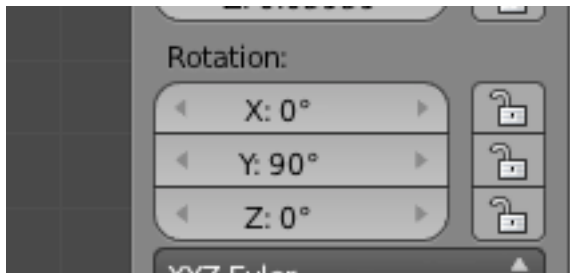


Press SHIFT-A and add a Cylinder object to the scene.

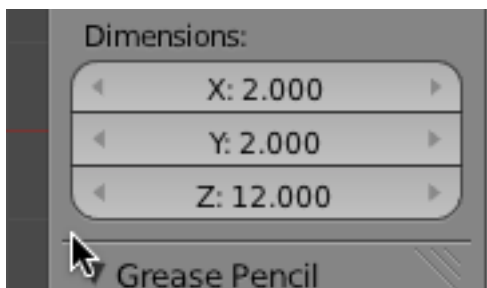
**In the creation tool panel on the left set the Cap Fill Type to Nothing.** This will essentially make the cylinder a Tube with open ends.



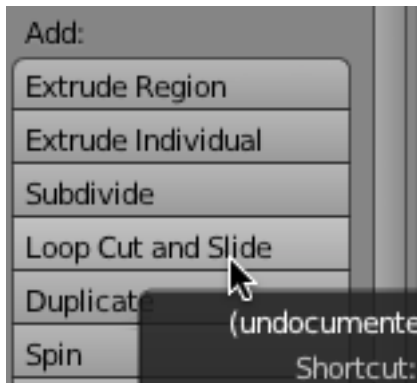
In the properties panel on the Right: Set the Y Rotation to 90



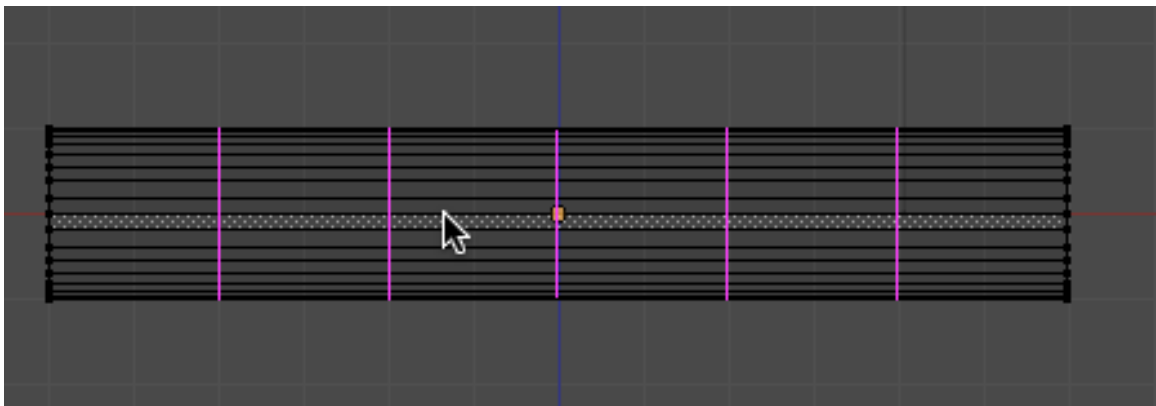
Set the Dimensions to X and Y = 2, Z=12



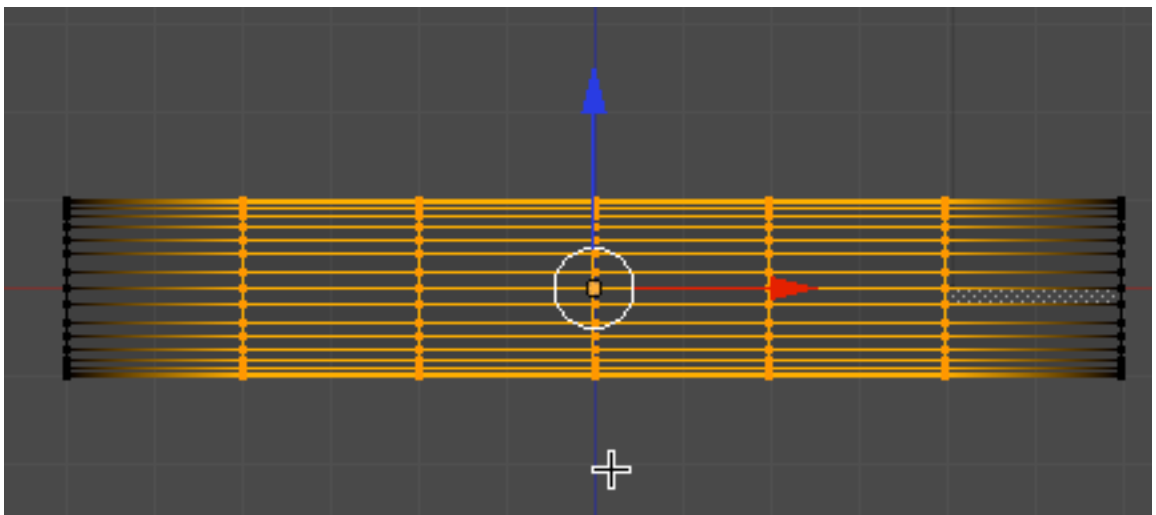
TAB into Edit mode. Deselect the vertices. In the tool panel on the left press the Loop Cut and Slide button.



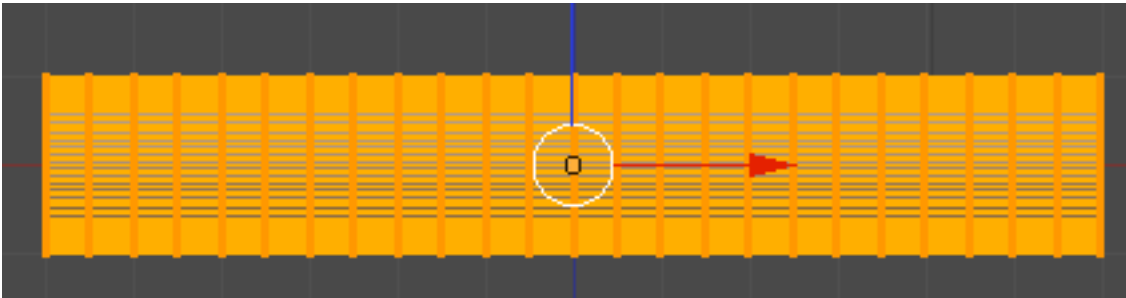
Move your cursor to the center of the cylinder until you see a blue vertical line (loop cut) in the center of the cylinder. Scroll your scroll wheel until you see 5 loop cuts.



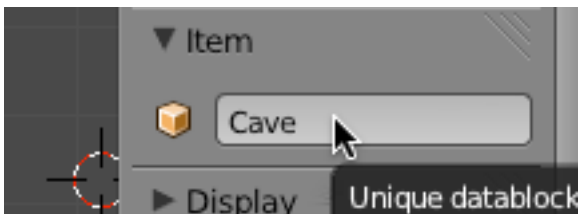
Left-Click to confirm.



Press the AKEY to deselect the vertices. Press the AKEY again to select all of the vertices. In the tool panel on the left press the Subdivide button TWICE. This will give us lots of vertices to deform or displace.

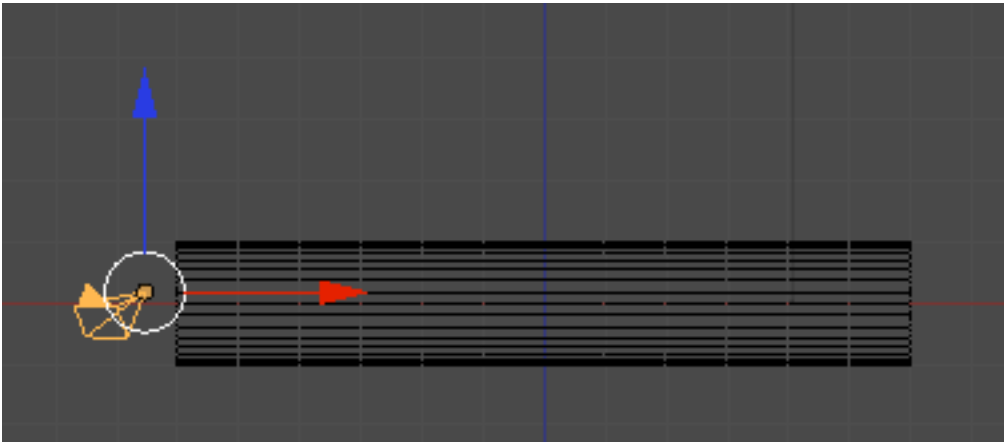


Press the AKEY to deselect the vertices. **TAB out of Edit Mode.** In the Properties Panel name this object “Cave”

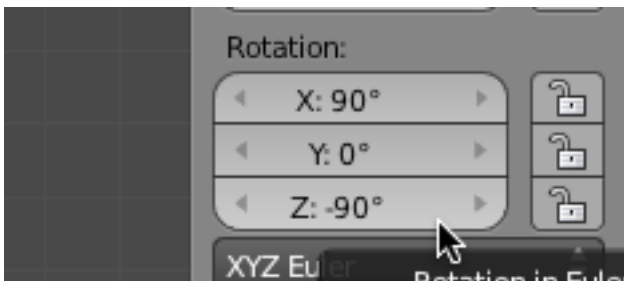


### Camera and Lighting:

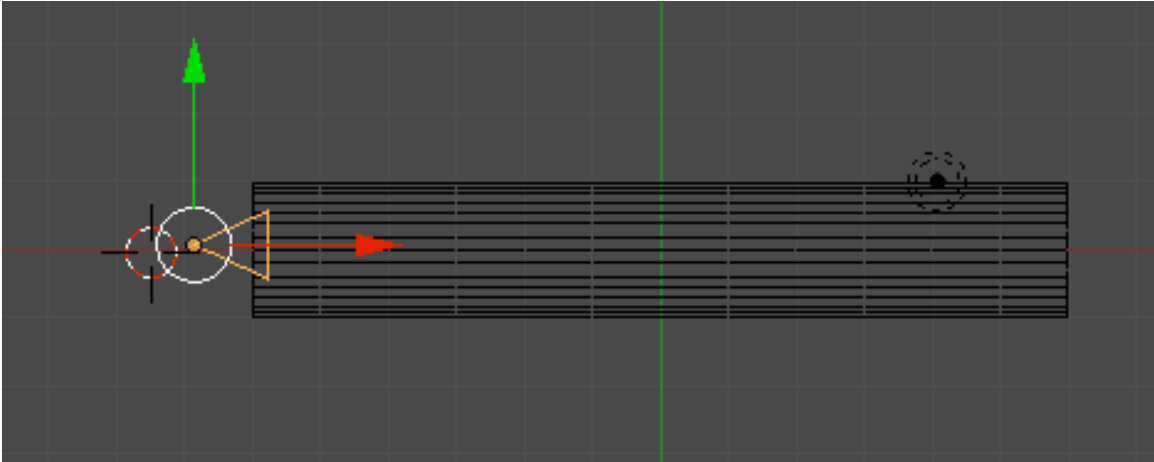
Select the camera object and place it to the left of the Cave object as shown below.



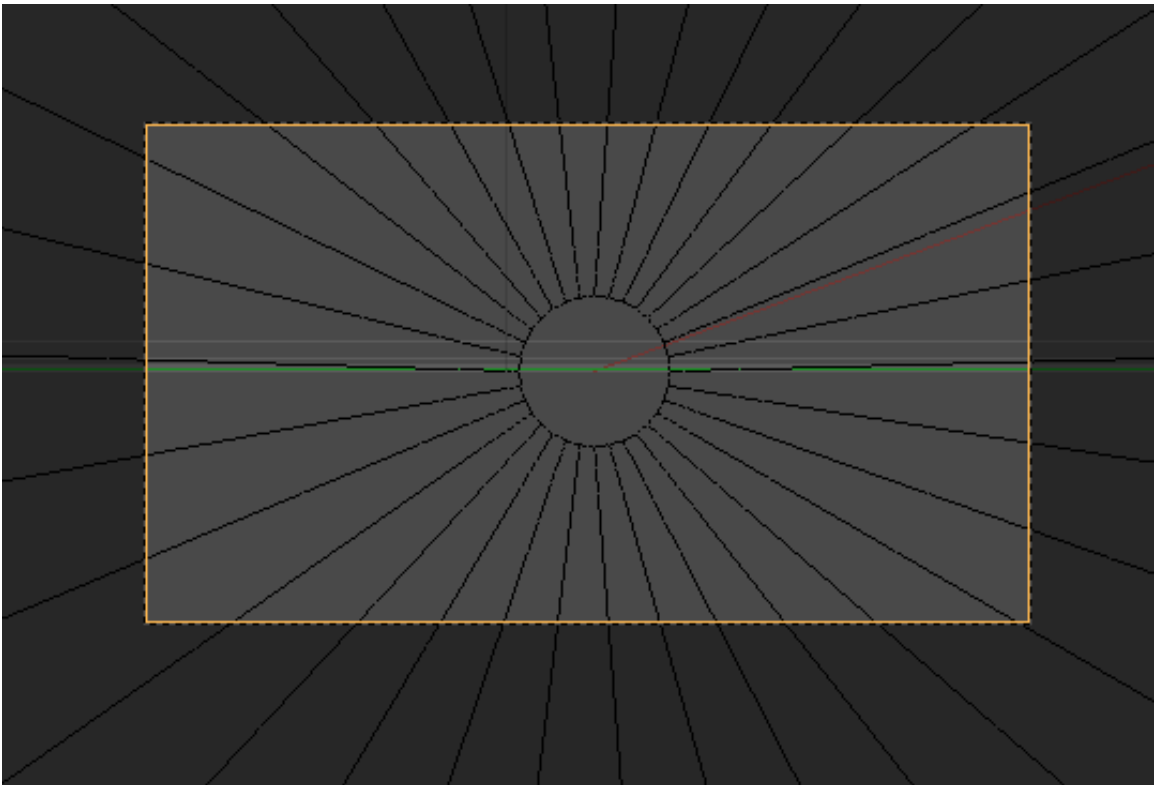
Set the camera object rotation to X=90, Y=0 and Z=-90



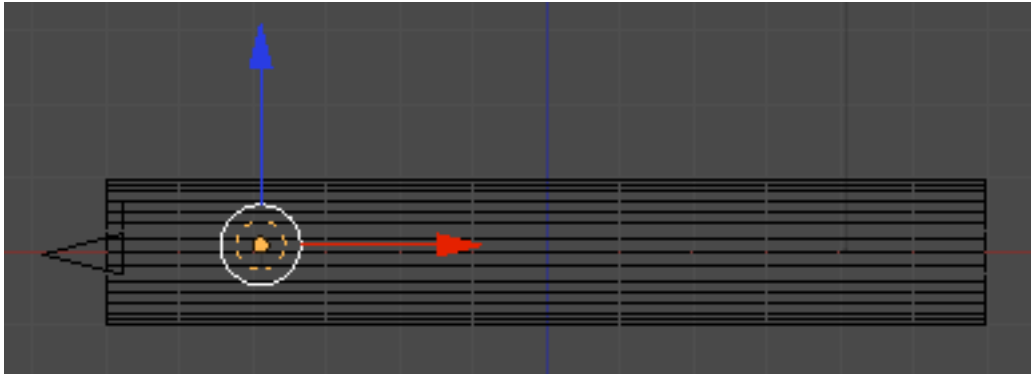
Go to Top view. Position the camera as shown below.



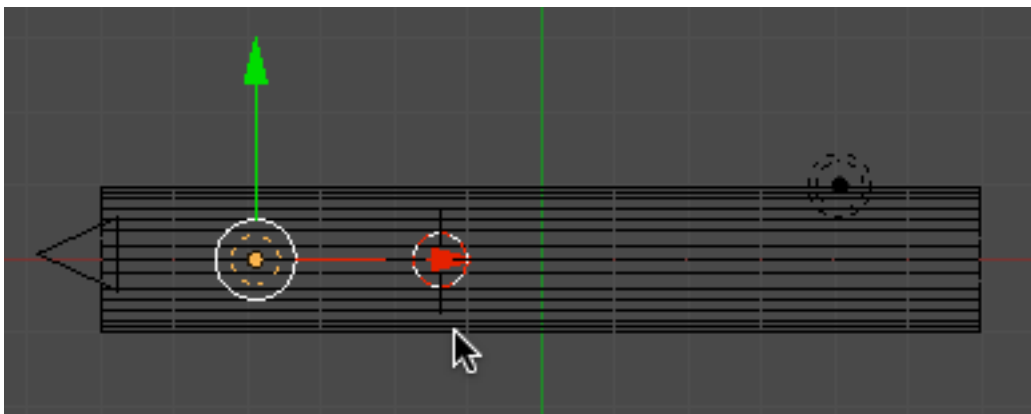
Press NUMPAD-0 (Camera View). The display should look something like shown below.



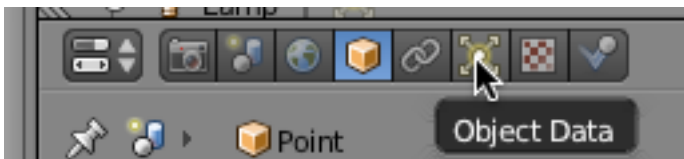
Go to front view. Press SHIFT-A and add a Point Lamp and place it inside the Cave object as shown below.



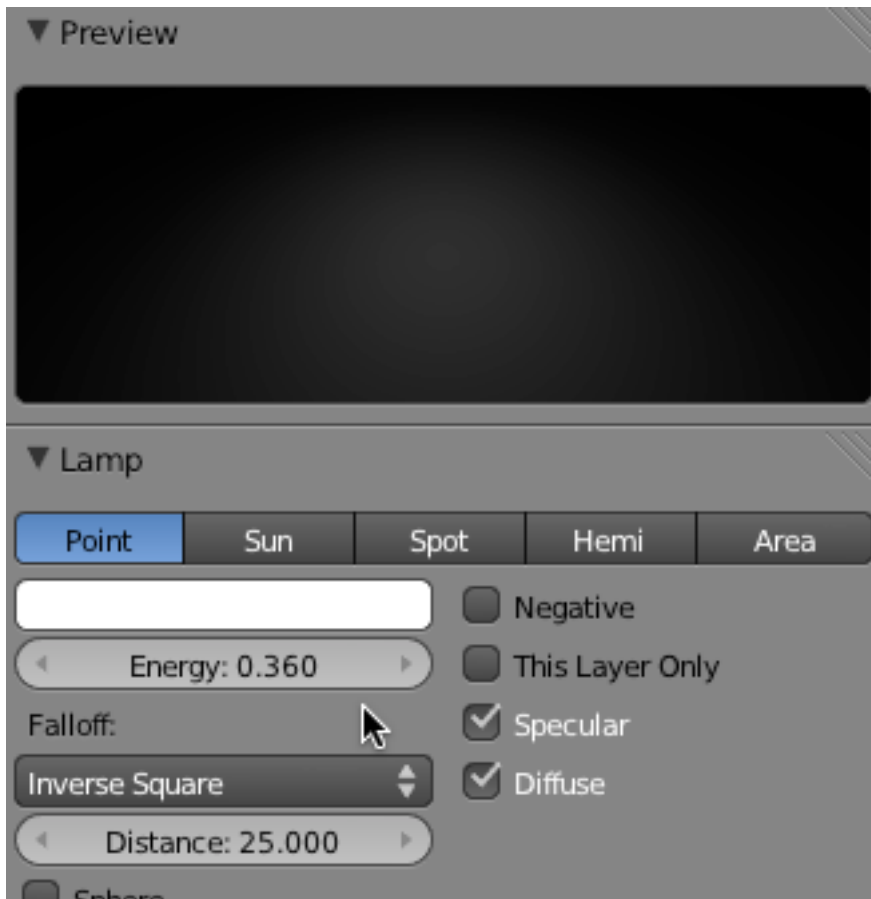
Go to top view and position the Point lamp as shown below.



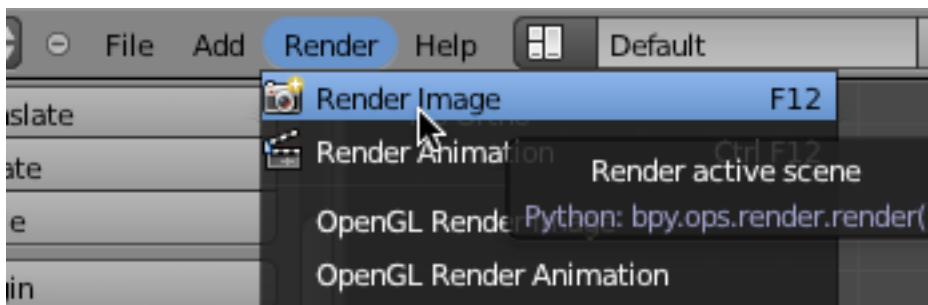
Go to the Object Data Editor.



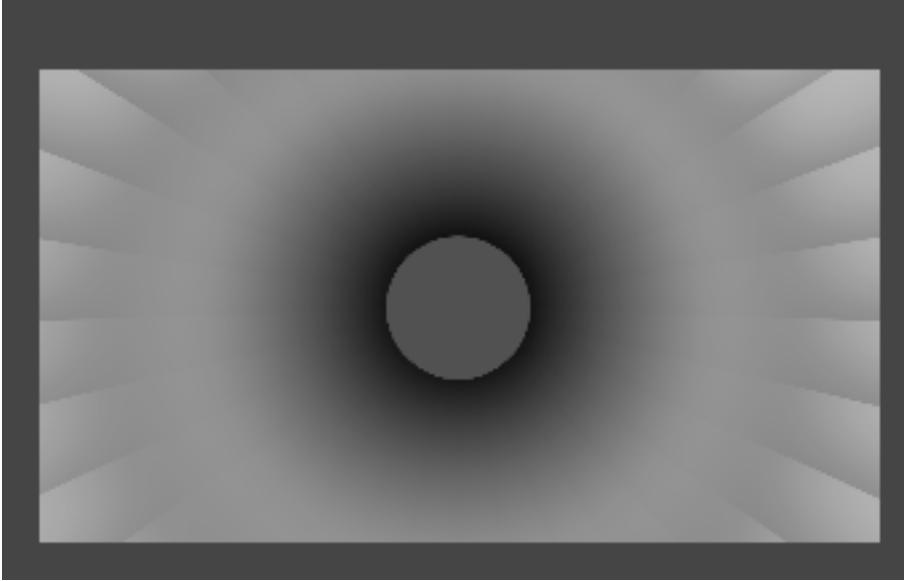
Set the Energy slider to a rather dim .360



In the top 3D Viewport window, press Render / Render Image

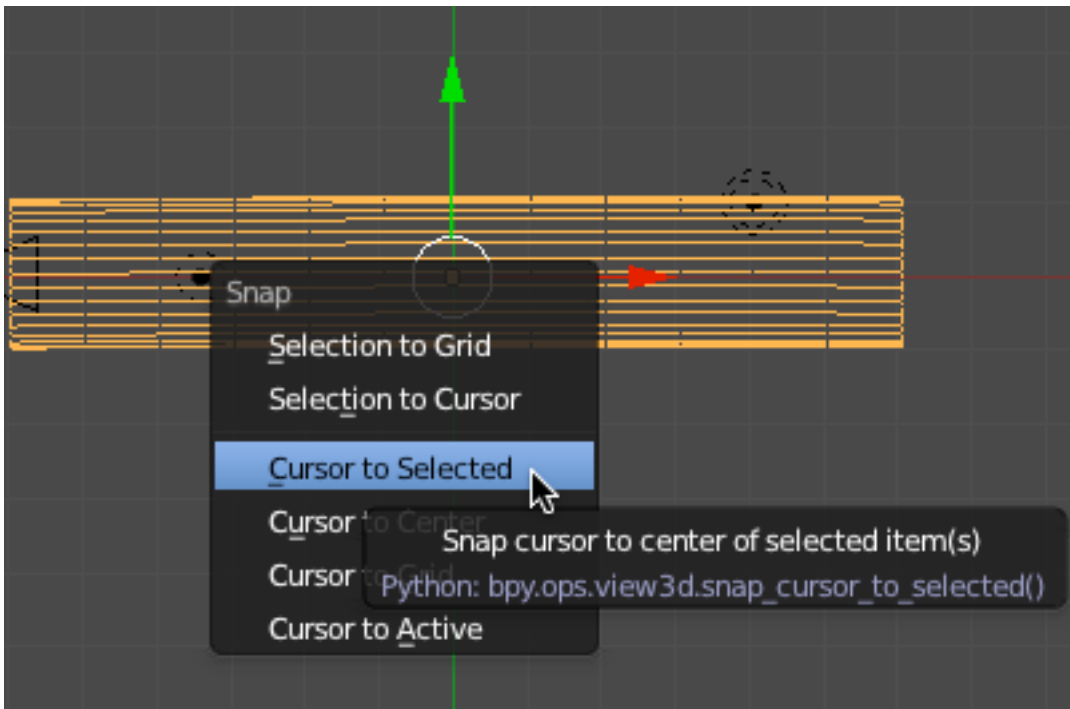


It should look something like shown below.



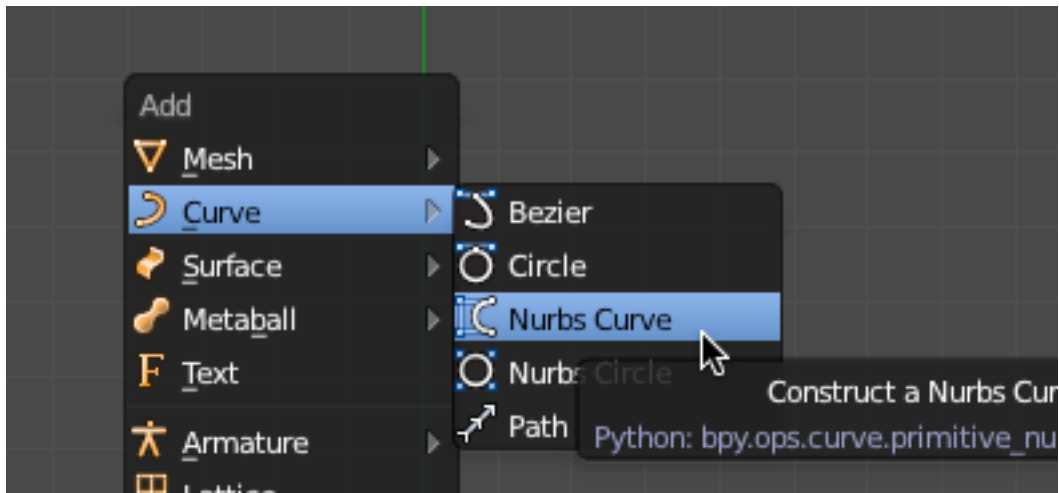
Save your Blend file.

**Go to top View.** Select the Cave object. Press SHIFT-S (Snap) and snap your 3D cursor to the selection.

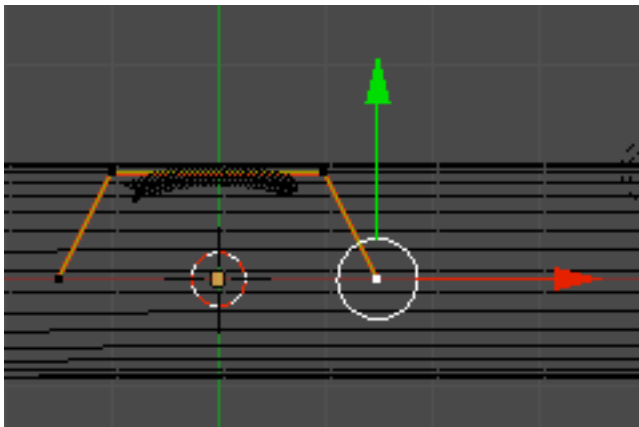


This will place your 3D cursor at the origin point of the cave object. Press SHIFT-A and add a NURBS Curve object.

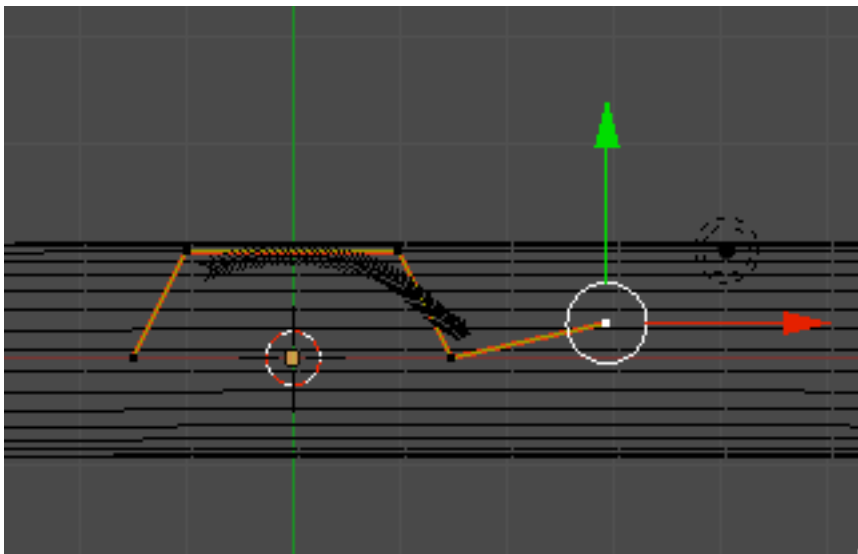




TAB into edit mode. Select the rightmost NURBS control point as shown below.



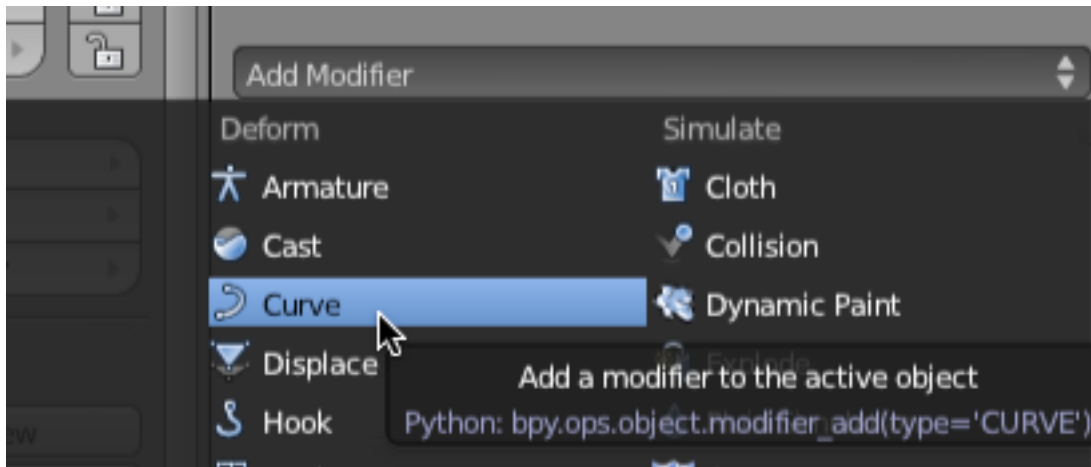
Move your cursor to the right of the control point and hold down the CTRL KEY and left-click. This will add a new control point to the NURBS curve as shown below.



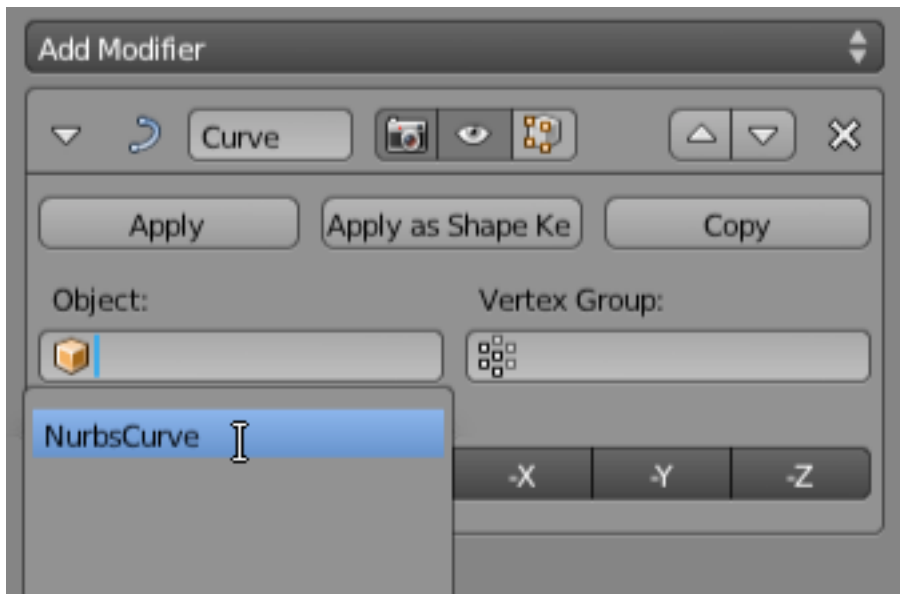
TAB out of edit mode. Select the Cave object. Go to the Modifier Editor.



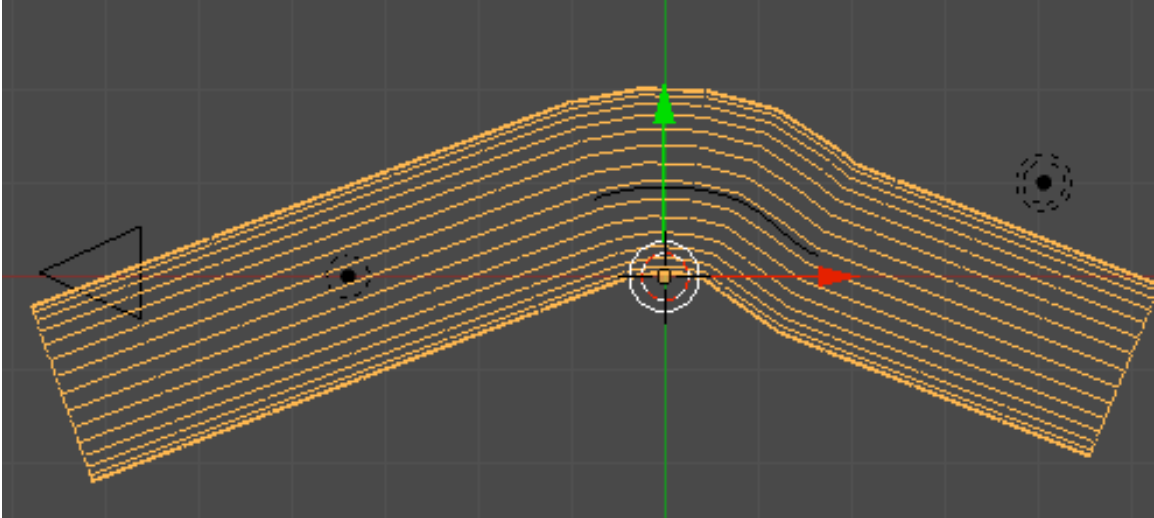
Press the Add Modifier button and add a Curve Modifier to the Cave object.



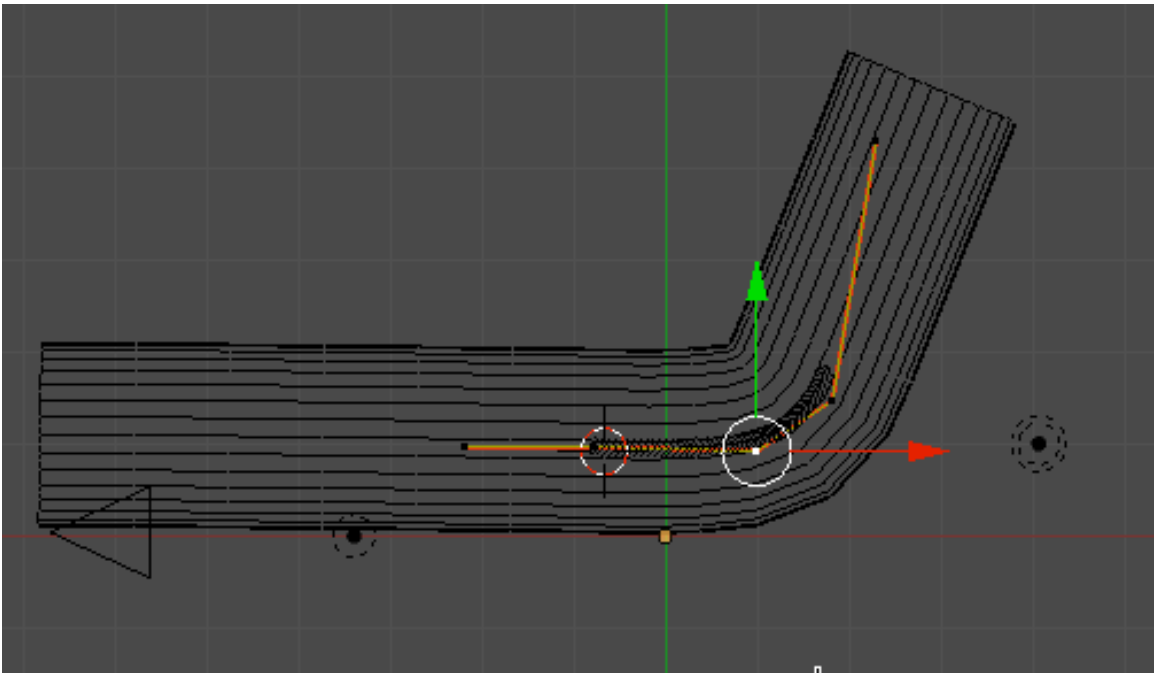
In the Object box, select the NURBS Curve object that we have just created.



Not that immediately, the NURBD Curve has an effect on the Cave object.



Select the NURBS Curve object. TAB into Edit mode. Adjust the NURBS curve so that in top view the cave curves as shown below.

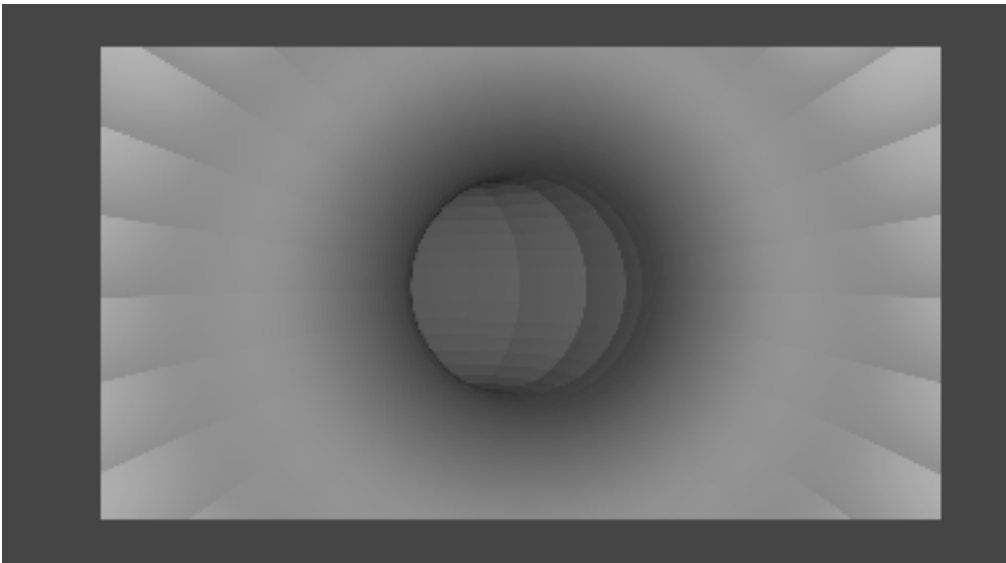


TAB out of edit mode. Select the Cave object AND the NURBS Curve object and move them so that the Cave object again is aligned with the camera and the point lamp.



Select the Default Blender lamp (not the one we placed inside the cave) and delete it.

Render the scene.

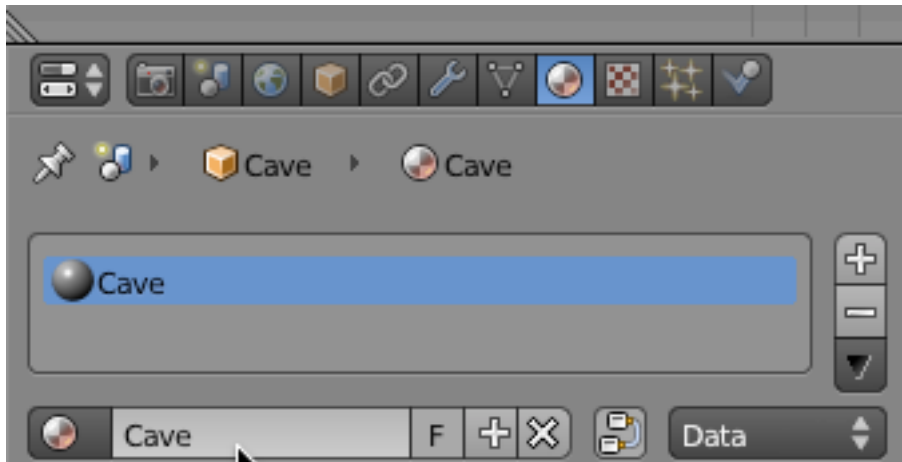


Save your Blend file.

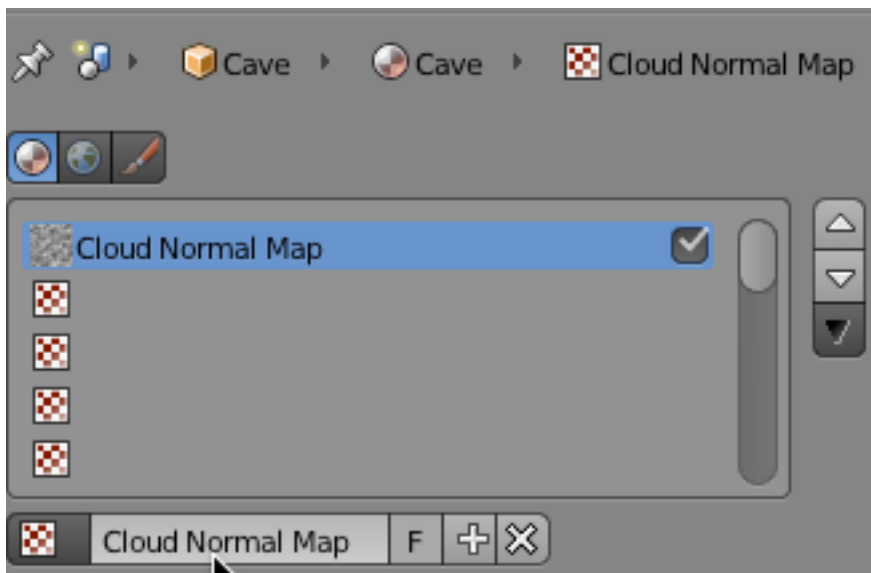
### **Materials:**

In the course of adding materials to the Cave model we will use 2 image files named “rock.png” and ripples.png”. These image files can be downloaded [HERE](#).

Select the Cave object. Go to the Material Editor. Press the New button and name the material “Cave”.



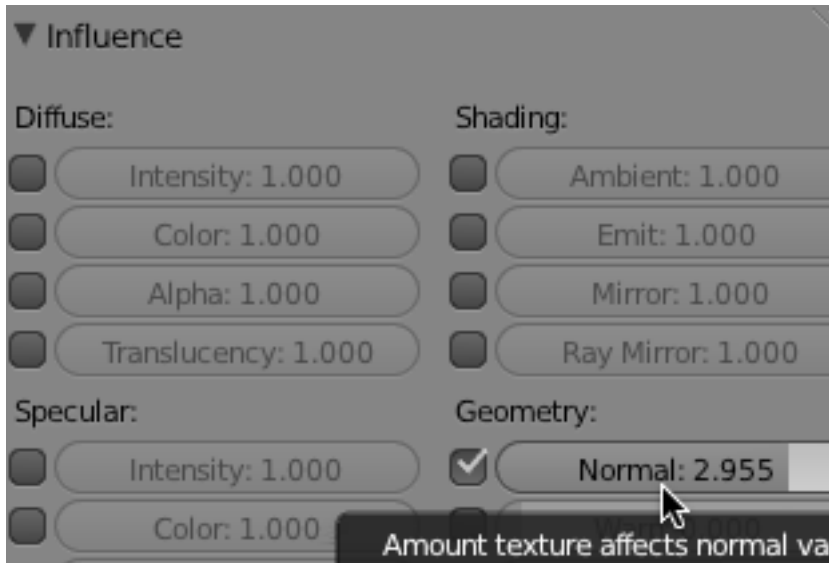
Go to the Texture Editor. Select the first Texture channel. Press the New Button and name this Texture “Cloud Normal Map”.



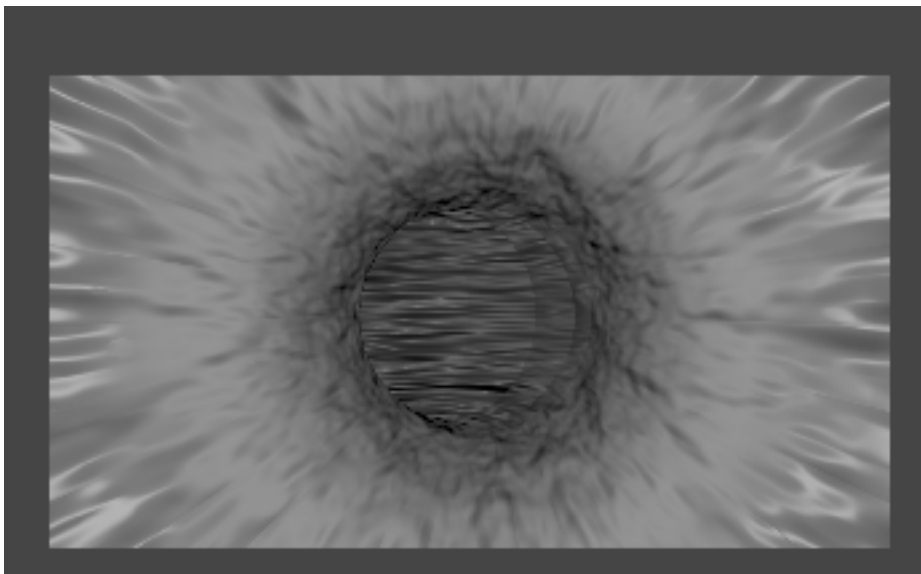
We will use the default Blender generated “Clouds” texture.

In the Mapping panel set the Projection to Tube.

In the Influence panel, UNCHECK Color and checkmark Normal. Set the Normal slider to 2.955

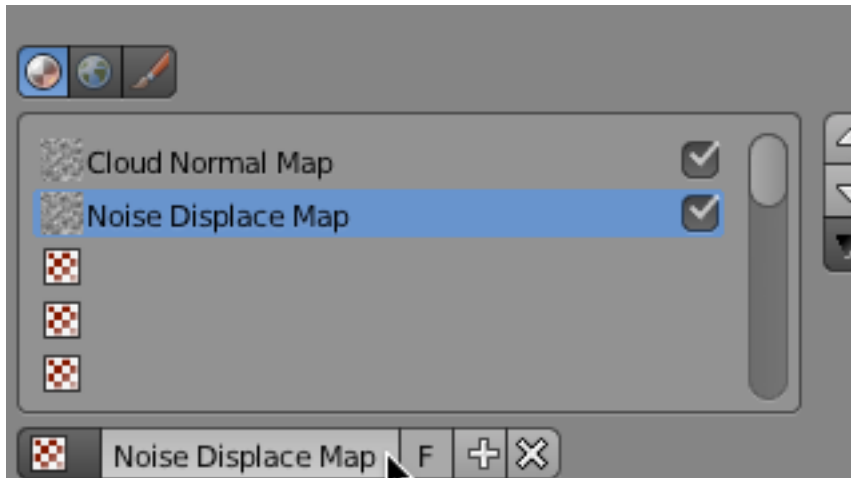


Render the scene.



Save your Blend file.

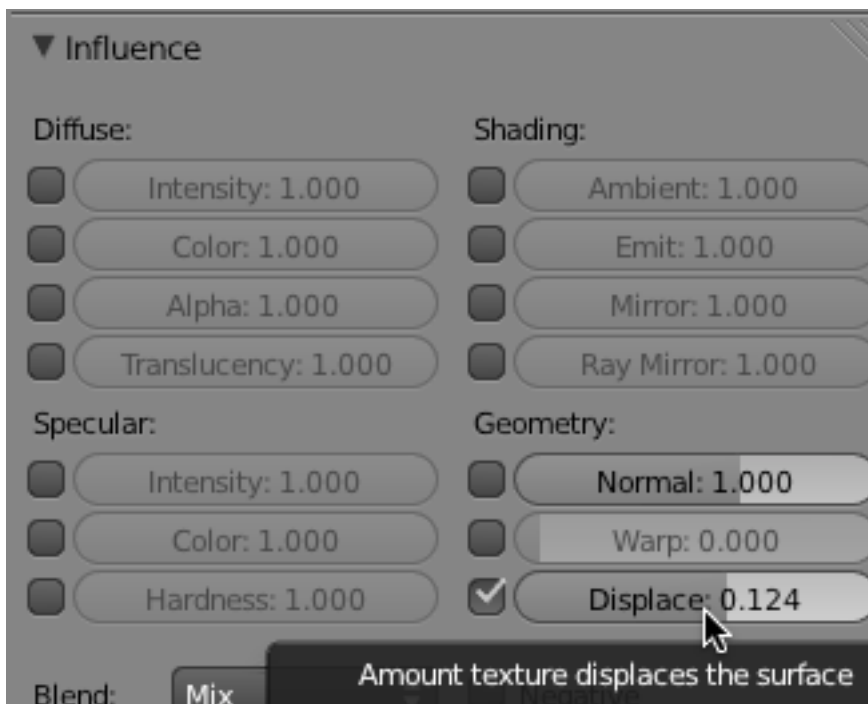
Scroll up to the top of the Texture editor. Select the second Texture Channel. Press New and name this Texture “Noise Displace Map”.



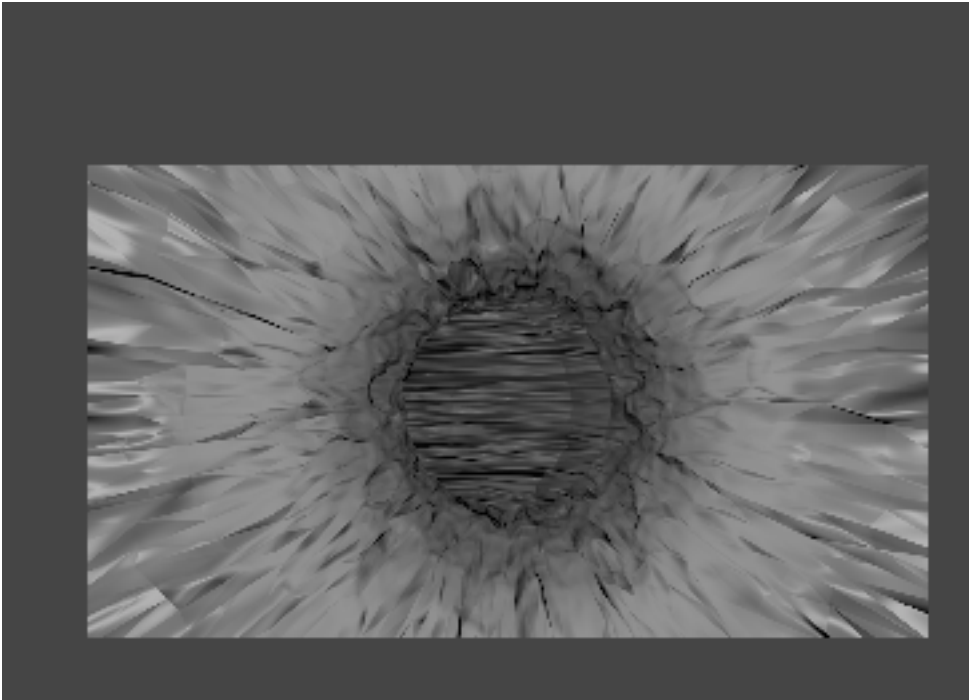
Change the Type to Distorted Noise

In the Mapping panel, set the Projection to Tube.

In the Influence panel, UNCHECK Color and checkmark Displace. Set the Displace slider to 0.124

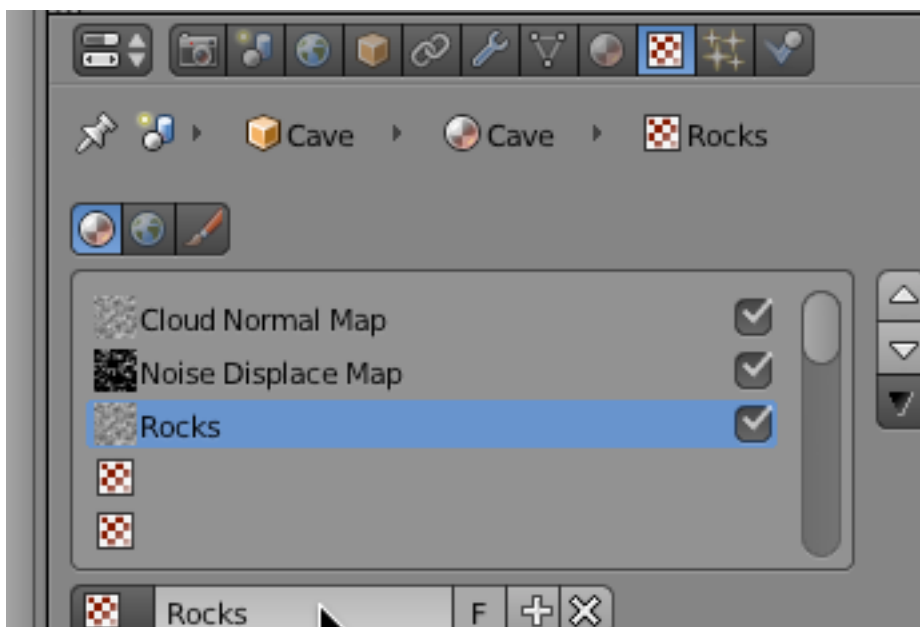


Render the scene.



Save your Blend file.

Select the third Texture channel for the Cave object material. Press the New button and name this Texture “Rocks”.

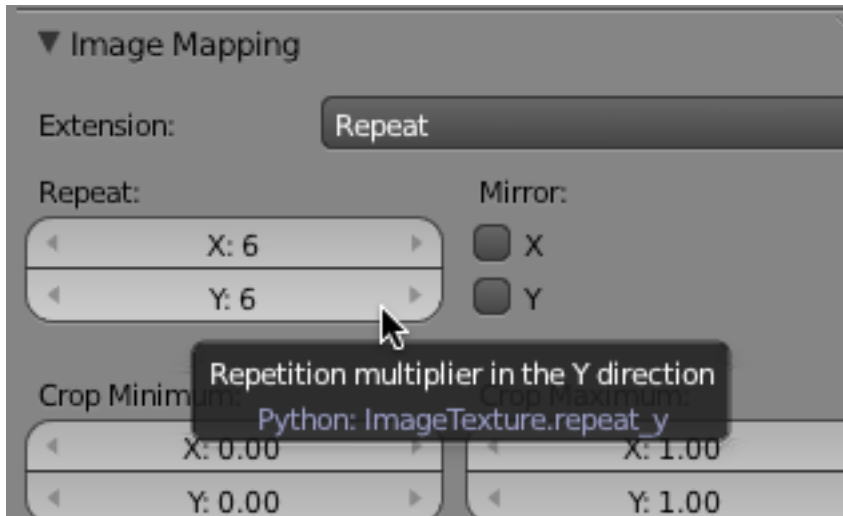


Set the Type to Image or Movie. Press the Open button. Locate the rock.png file on your computer and select it then press Open Image.

In the Image Sampling panel, checkmark Flip X/Y

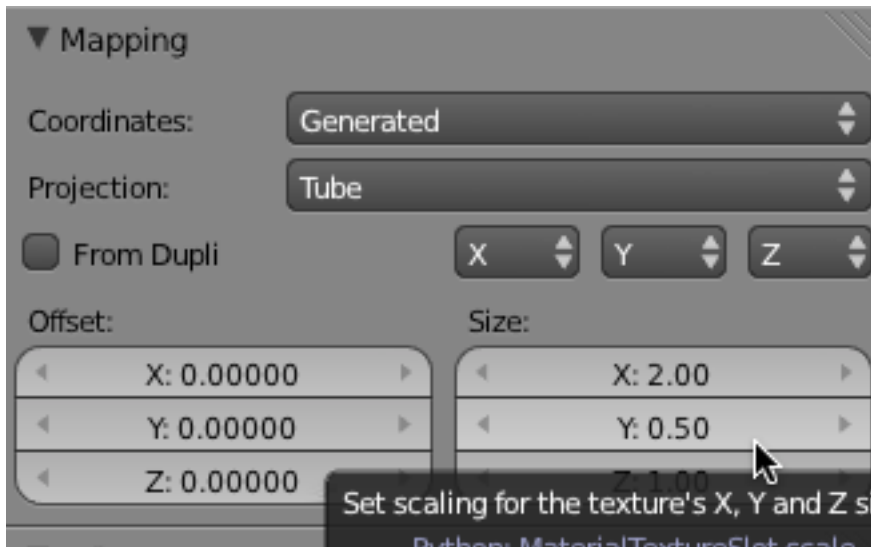


In the Image Mapping panel, set the X repeat to 6 and the Y repeat to 6.

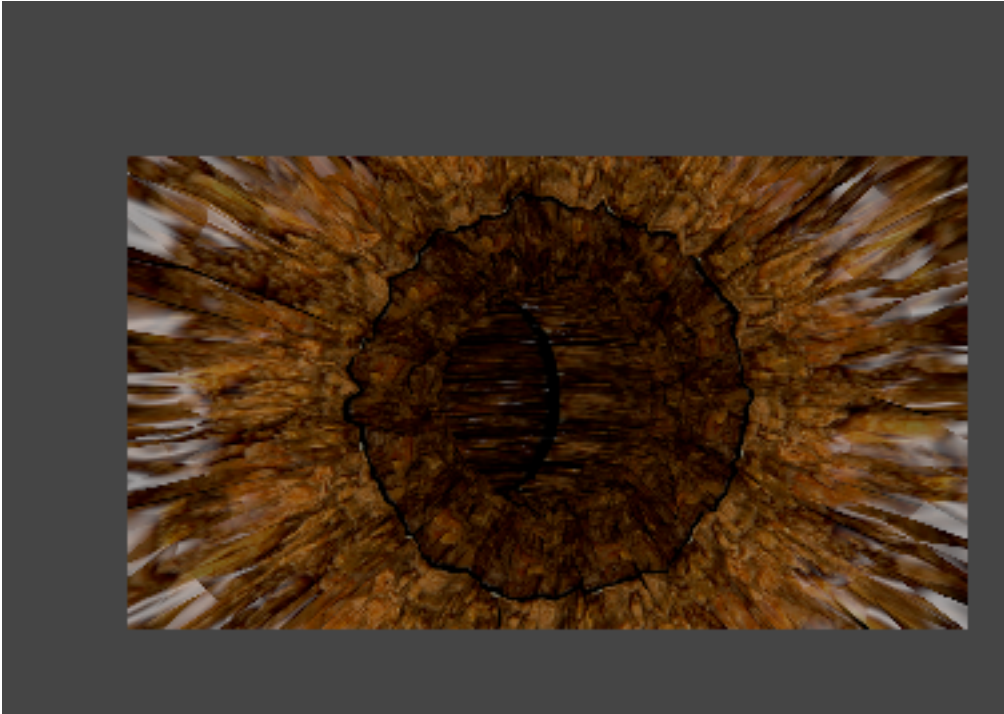


In the Mapping panel, set the Projection to Tube

Set the X Size to 2.0 and the Y Size to .5



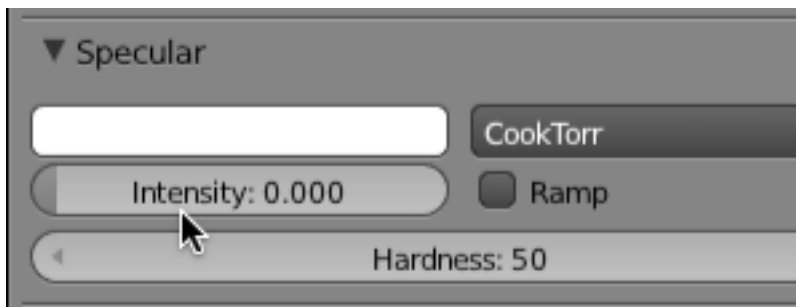
Render the scene.



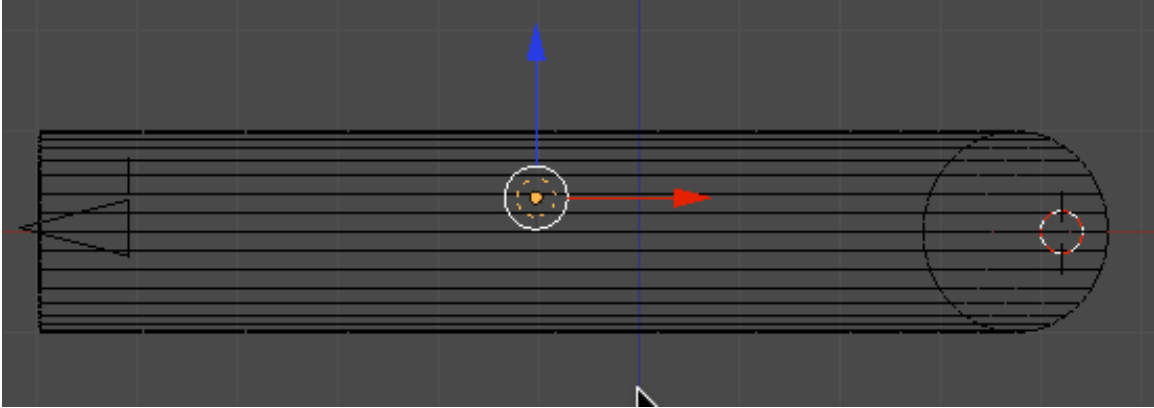
Save your Blend file.

With the Cave object selected, go to the Materials panel (we have already created a material called “Cave” that has 3 texture channels)

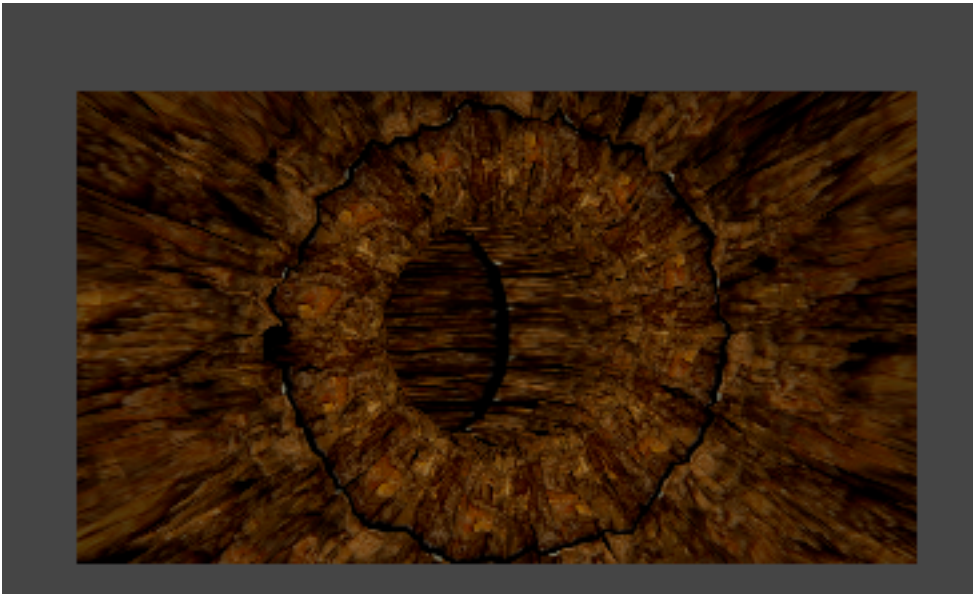
In the Specular panel, set the Intensity to 0 (we do not want specular highlights).



Go to front view. Set the Camera and the Point lamp object as shown below.

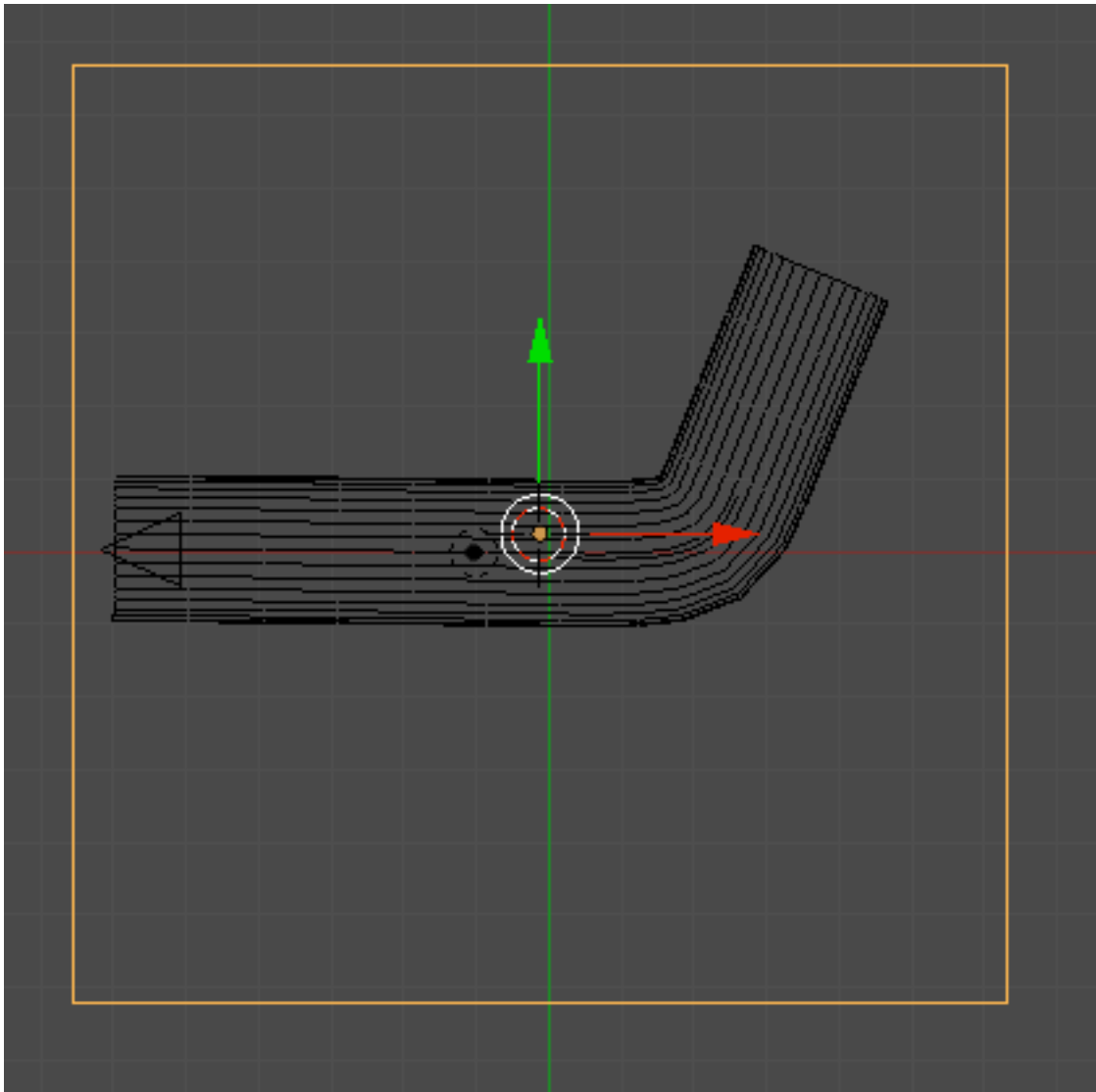


Render the scene.

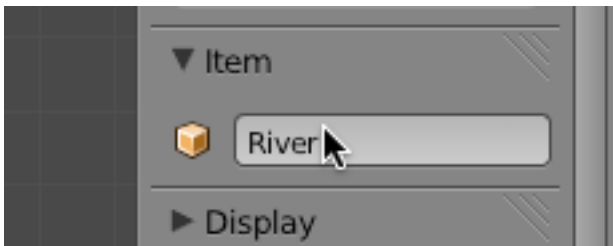


Save your Blend file.

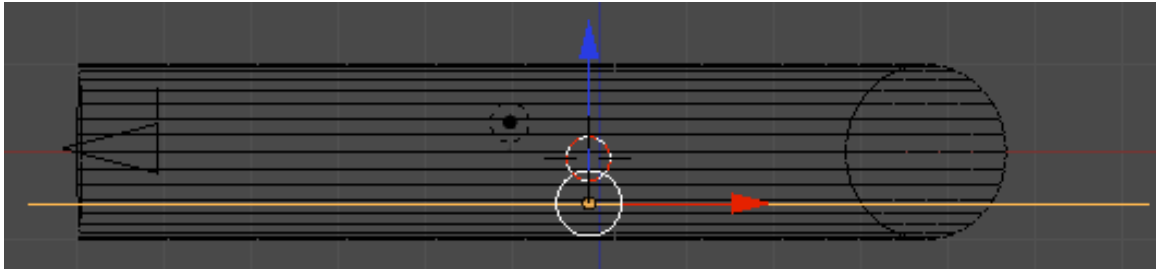
Switch to top view. Place your 3D cursor in the center of the Cave object. Press SHIFT-A and add a Plane object. Press the S KEY (Scale) and scale up the Plane object as shown below.



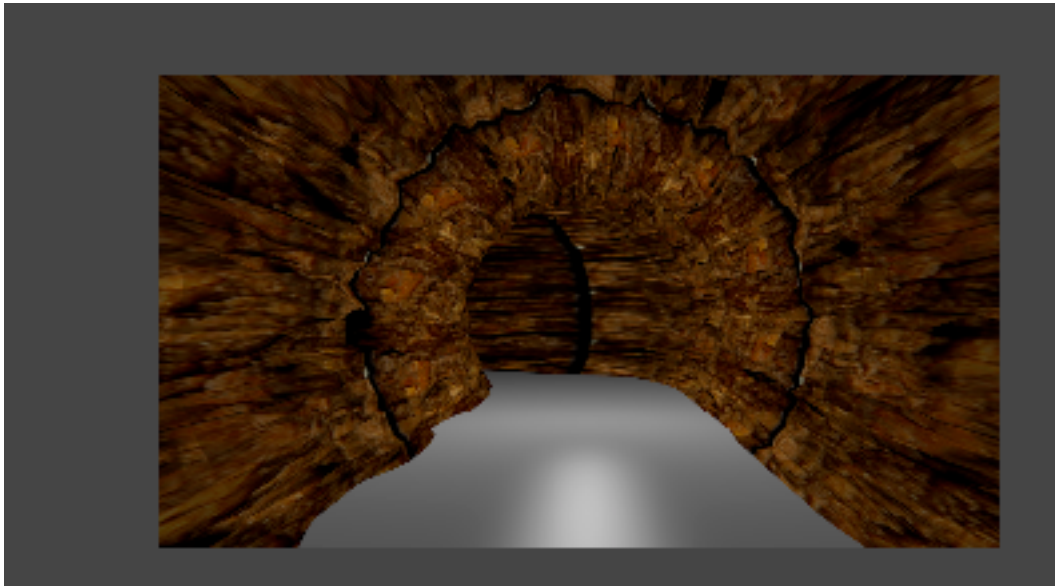
Name this object “River”



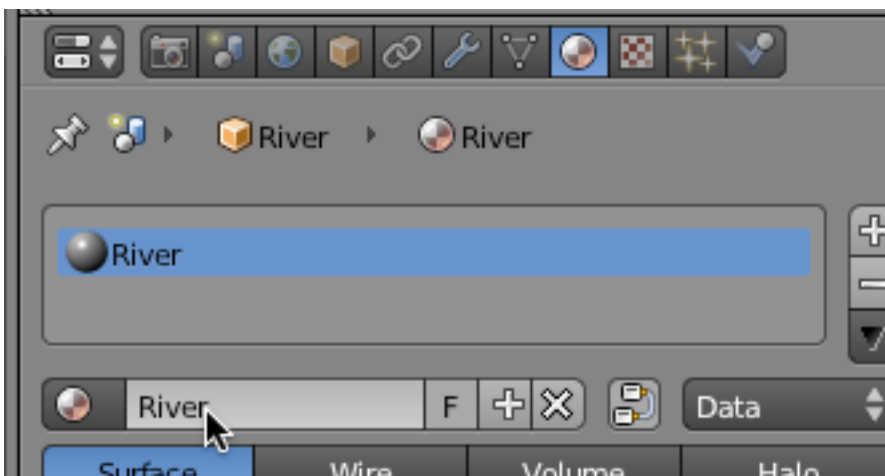
Switch to front view. Place the River object as shown below.



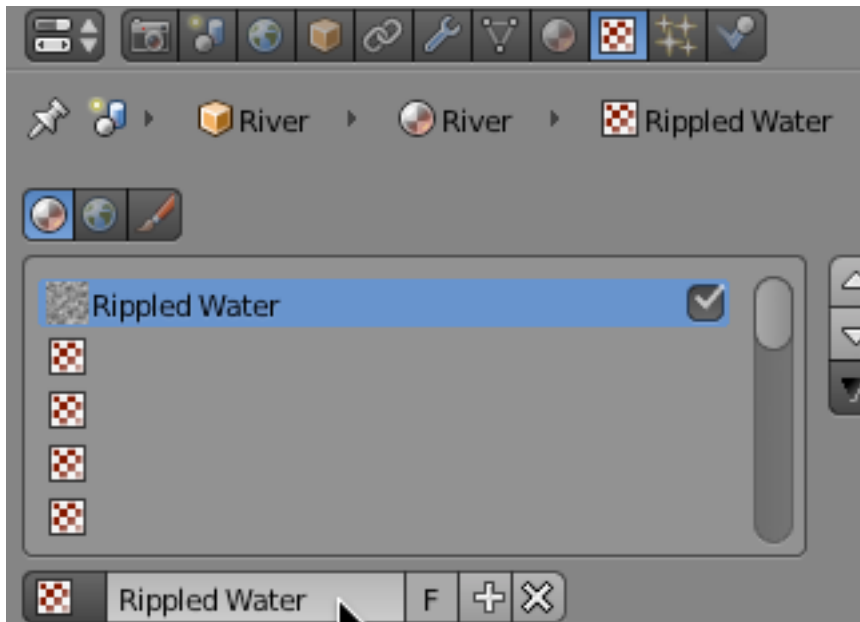
Render the scene.



With the River object selected, go to the Materials editor. Press the New button and name this material River.



Go to the Texture editor. Press New and name this texture Rippled Water.

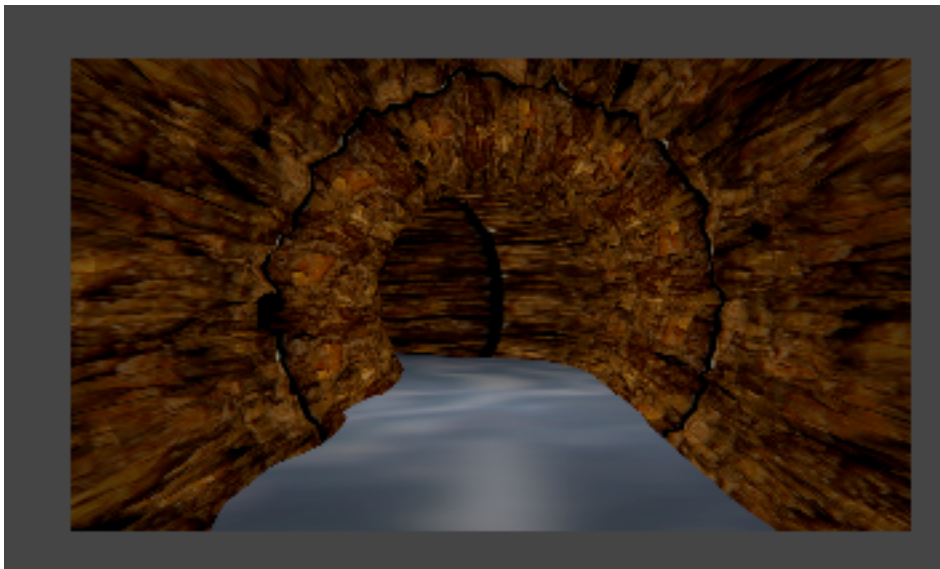


Change the Type to Image or Movie. Press the Open button. Locate the ripples.png file on your computer and select it. Then press Open image.

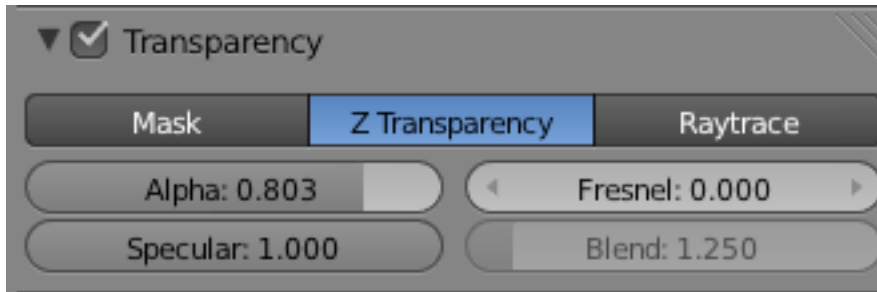
Go to the Materials editor.

In the Specular panel, lower the Intensity to .105

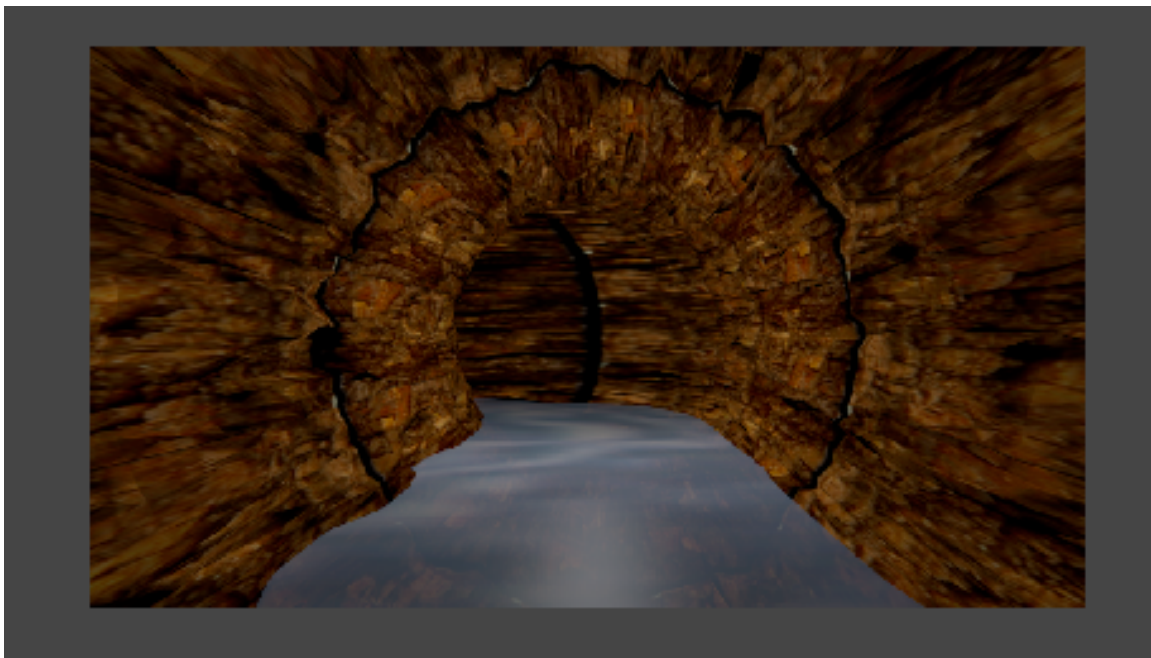
Render the image.



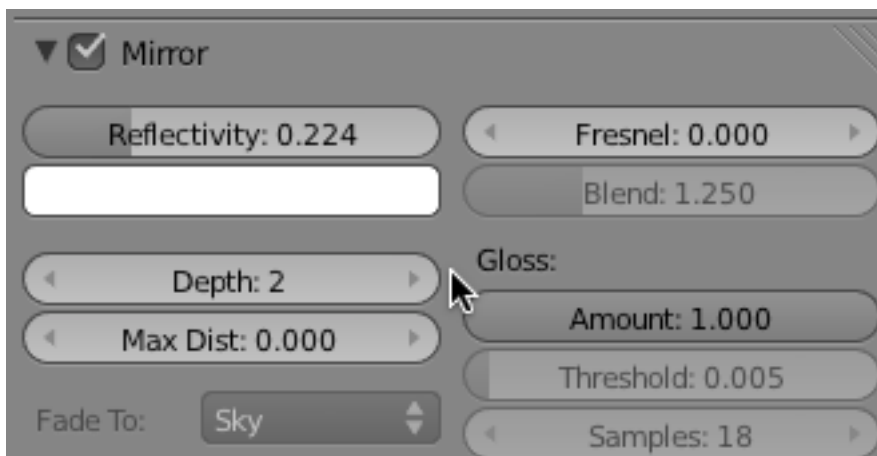
Checkmark the Transparency panel checkbox. Set the Alpha to .803



Render the scene.

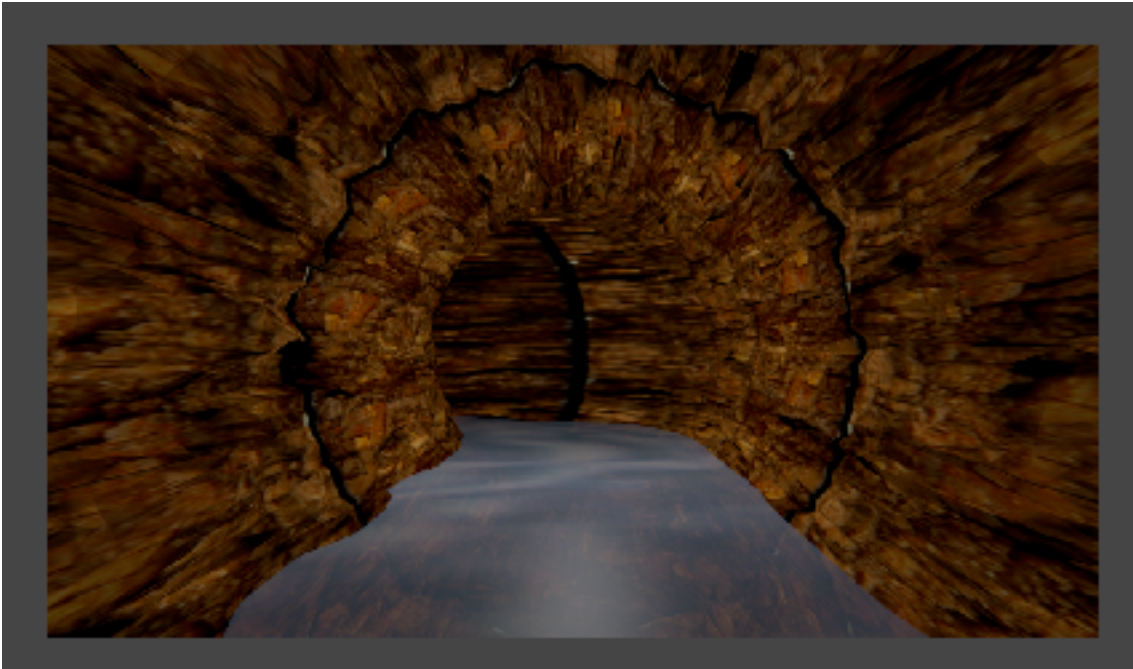


Checkmark the Mirror panel checkbox. Set the Reflectivity to .224



Render the scene.



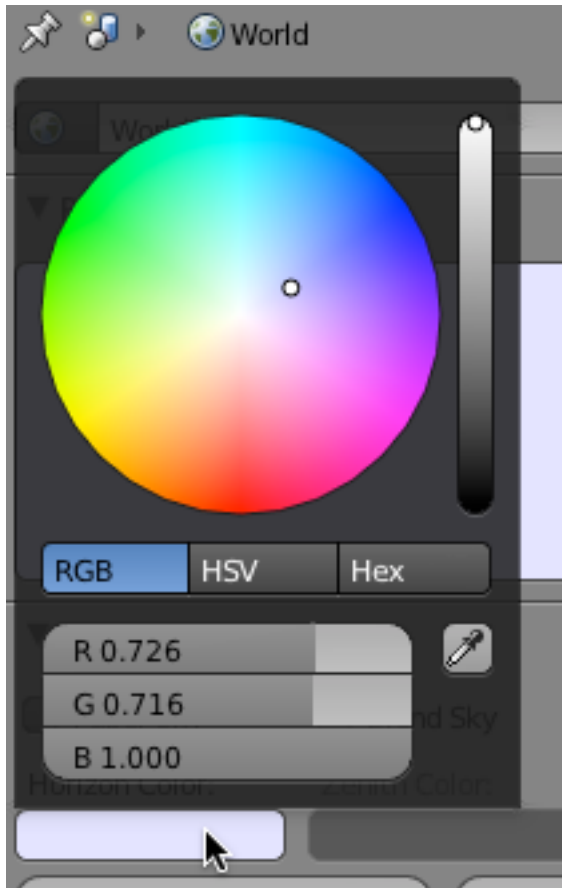


Go to the World Editor.



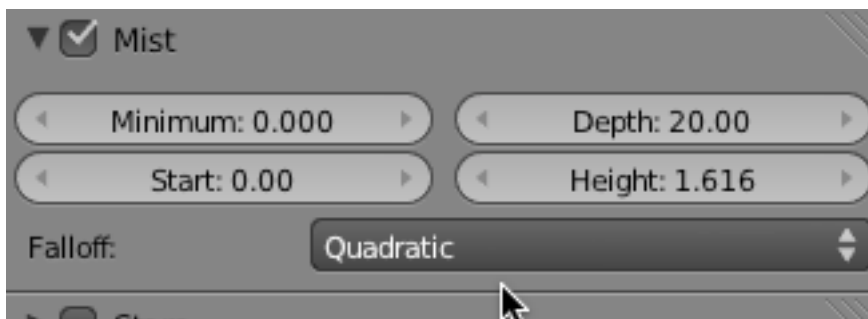
We will add a mist effect to the scene. Click on the Horizon color swatch (this is the color of the mist). Set  $R=.726$ ,  $G=.716$  and  $B=1$



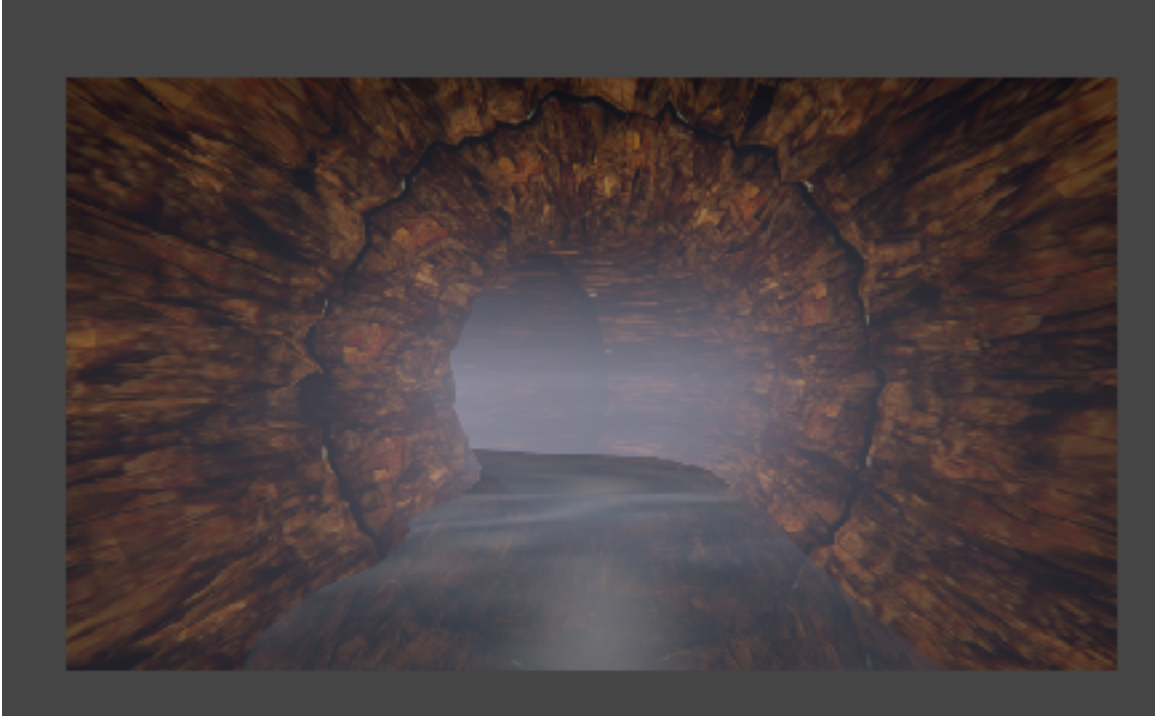


Checkmark the Mist panel checkbox.

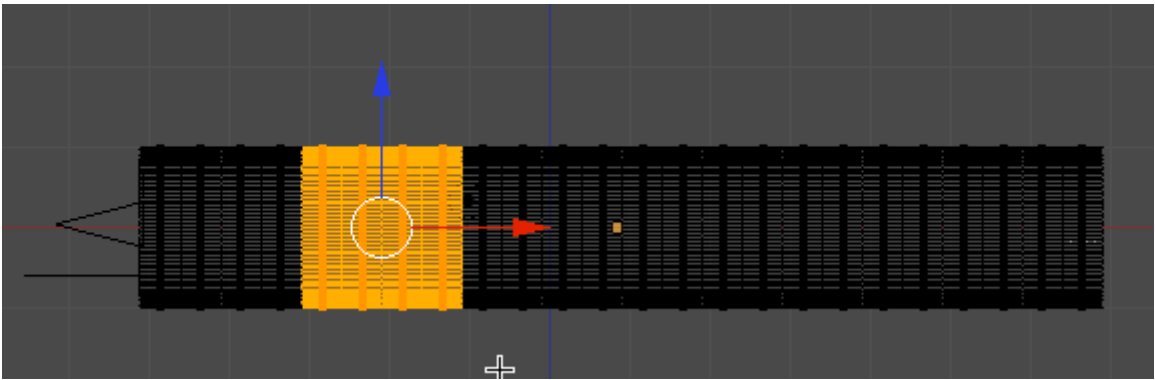
Set the Depth to 20, Start to 0 and the Height to 1.616



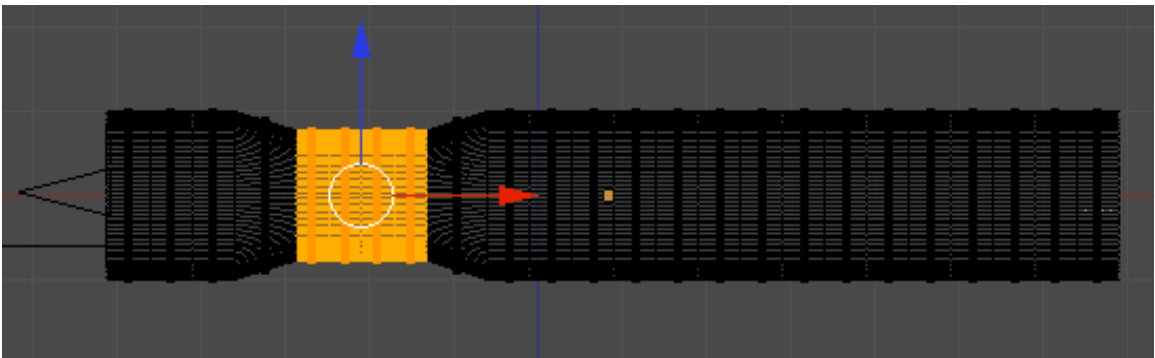
Render the scene.



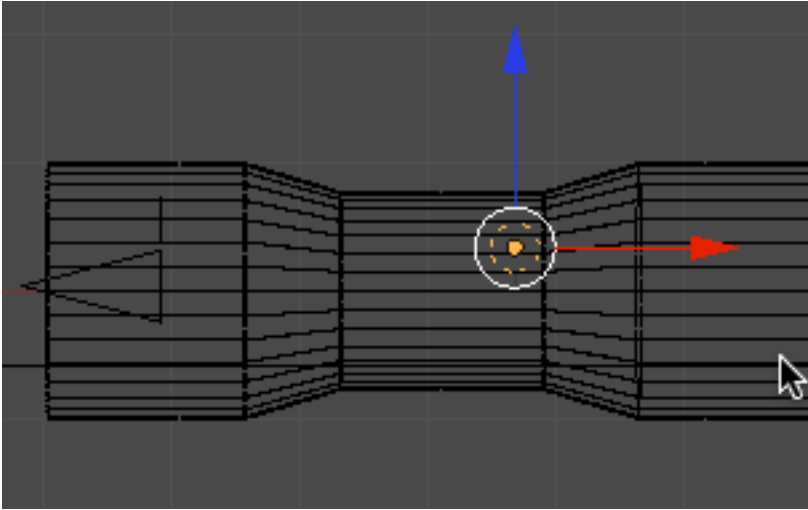
Our cave is a bit too uniform. Switch to top view. Select the Cave object. TAB into edit mode. Box select a group of vertices as shown below.



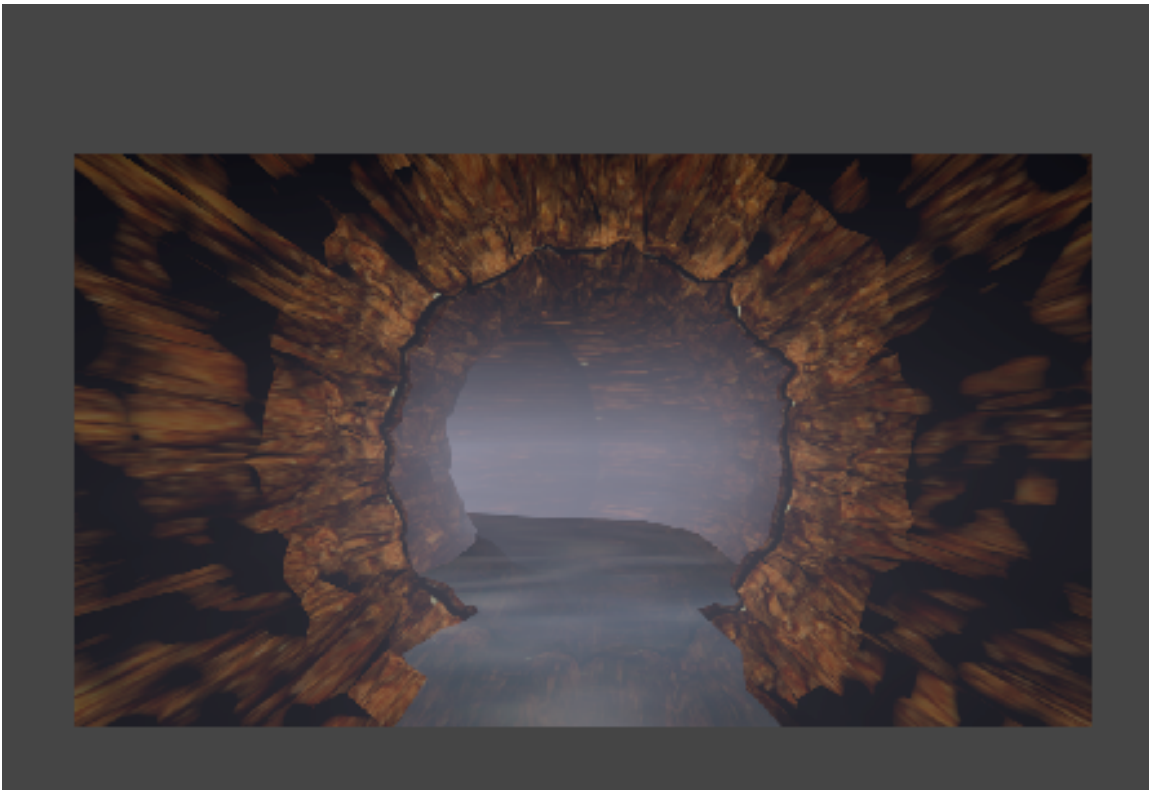
Press the SKEY (Scale) and scale down the vertices as shown below.



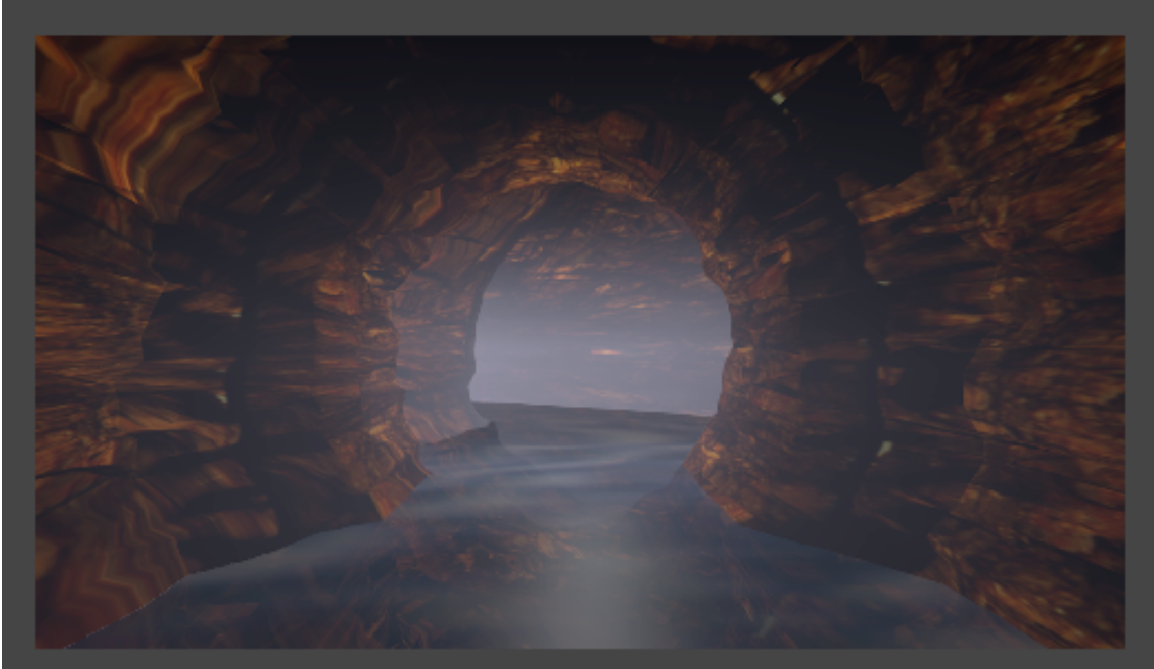
Make sure the point lamp object is inside of the scaled down section.



Render the scene.



Adjusting the camera and lamp and scale of the vertices you should be able to achieve a rendering similar to this.



A completed Blend file of this tutorial named “Cave\_Complete.blend” can be downloaded [HERE](#).