Course: 3D Design
Title: Bump Mapping – Globe Animation
Dropbox File: Globe.zip
Blender: Version 2.41
Level: Beginning
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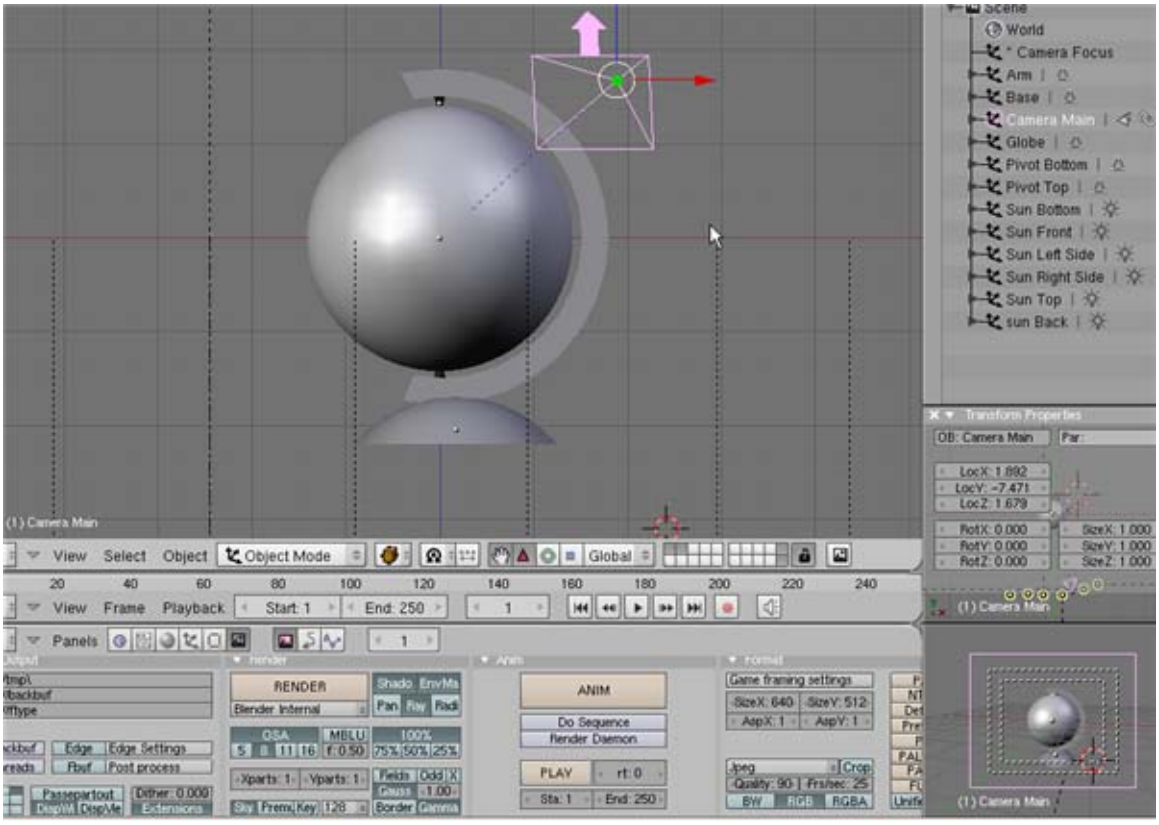
Bump Mapping – Globe Animation

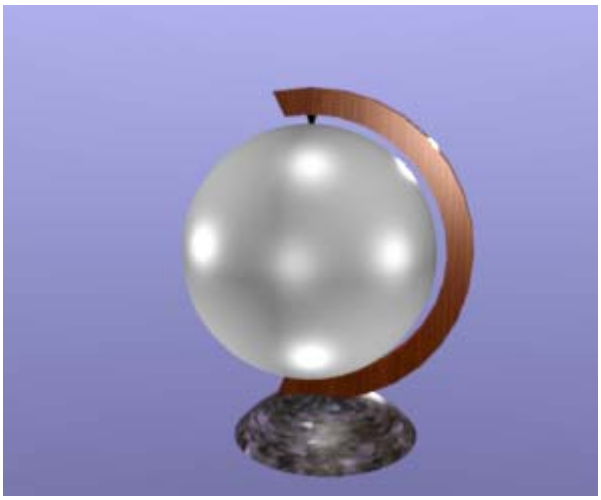
In this tutorial, we'll add a bump map and a regular texture map to a model of a globe and animate the globe's rotation.

Open Globe.blend. This file is located in the Globe.zip file.



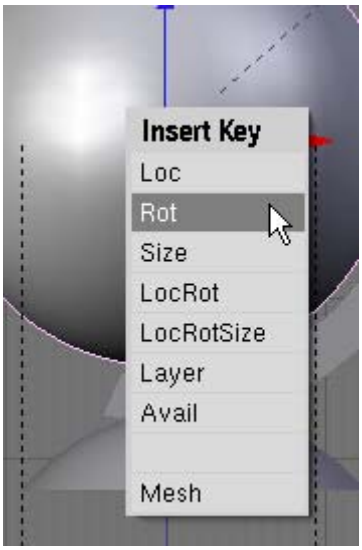
This scene consists of a sphere (named Globe), an extruded and faced curve (named Arm), 2 scaled cylinders (named Pivot Top and Pivot Bottom) and a half sphere (named Base). The Arm object has a Mahogany Wood texture; the Base object has a Labrador Marble texture and the Pivot objects have a Black Material. The 3D viewport is in Front View and the Camera and Lighting layers are active. The Globe object and the Pivot objects are parented to the Arm object.

Render F12.

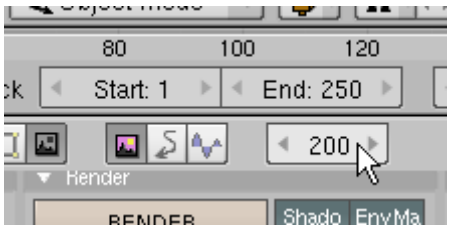


We will first animate the Globe object's rotation then set it at an angle. Make sure you are in frame 1.

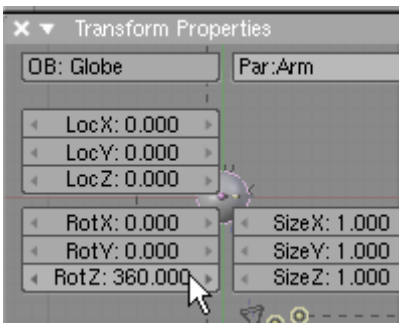
Select the Globe object alone. Press the IKEY (Insert) and choose to insert a ROT (rotation) Keyframe.



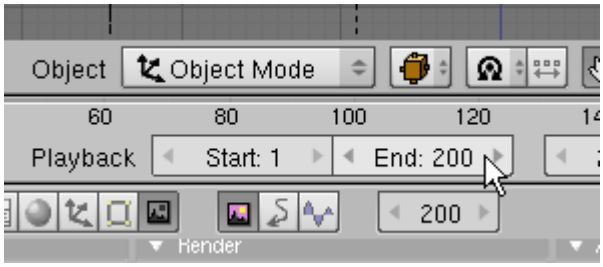
This records the rotation of the Globe object at frame 1 (which is 0 degrees). Change the current Frame to 200.



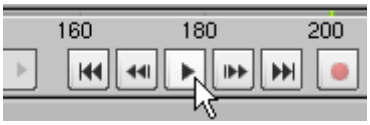
In the Transform Properties Panel set the ROTZ (Rotation around the Z axis) to 360.



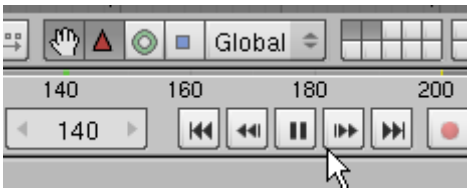
Press the IKEY (Insert). Choose to insert a ROT (rotation) keyframe. This records the rotation of the Globe object in frame 200 (which is 360 degrees around the Z axis). In the Timeline window change the End Frame to 200.



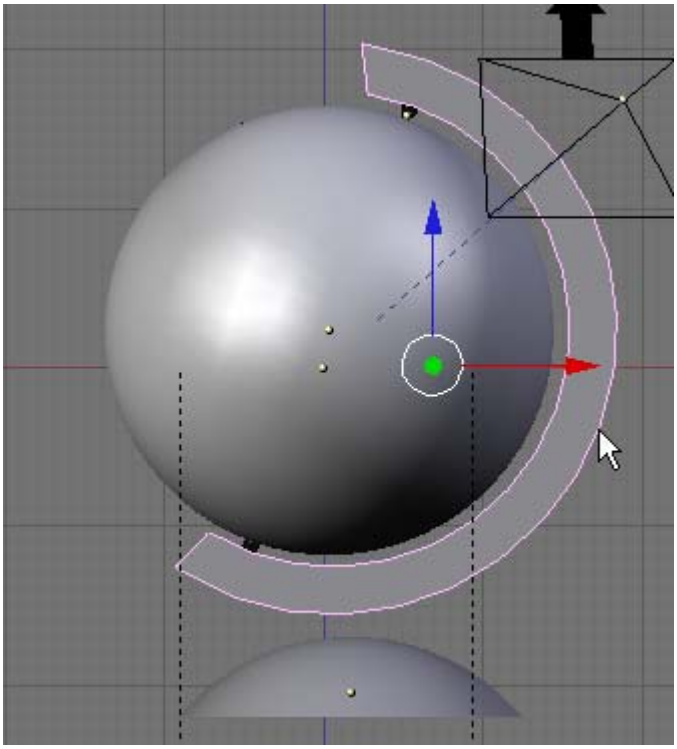
In the animation window press the Play button.



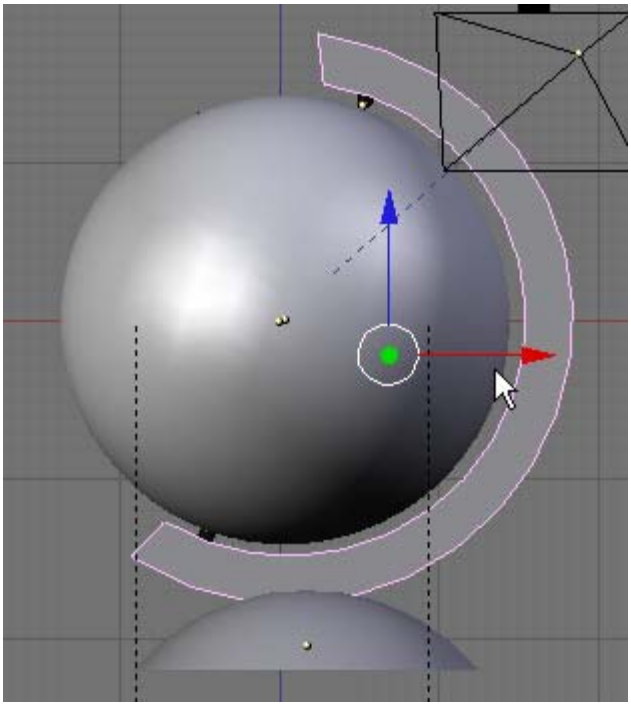
The globe revolves around the Z axis 360 degrees over the course of 200 frames. You can also see the Z Rotation change in the Transform Properties Panel as the animation plays. You can stop the playback of the animation by pressing the Stop button on the Timeline.



With the animation stopped, select the ARM object. Press the RKEY (Rotate). Hold down the CTRL KEY and rotate the Arm object 20 degrees.

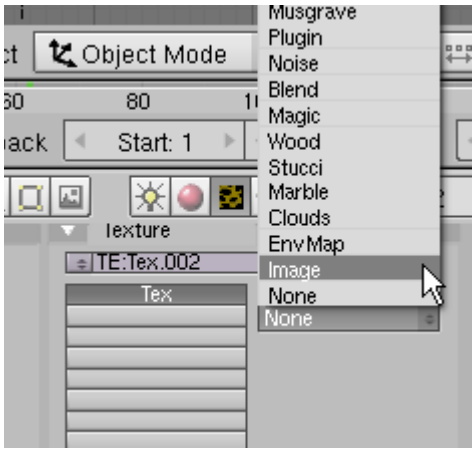


Since the Arm is a parent to the Globe and Pivot object, they also rotate with the Arm. Use the Blue Transform Widget to lower the Arm object back on the Base.



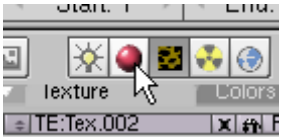
Note: we created the animation of the Globe object's rotation prior to setting it at a 20 degree angle. We did this so that we could animate the Globe on its true Z axis. If you play the animation the globe still revolves around the true Z axis.

Save your file F2. Select the Globe object alone. Press F5 (Shading). In the Materials Panel press the Add New button. In the Texture Panel press the Add New button. Press F6 (Textures). In the Texture Type dropdown box select Image.

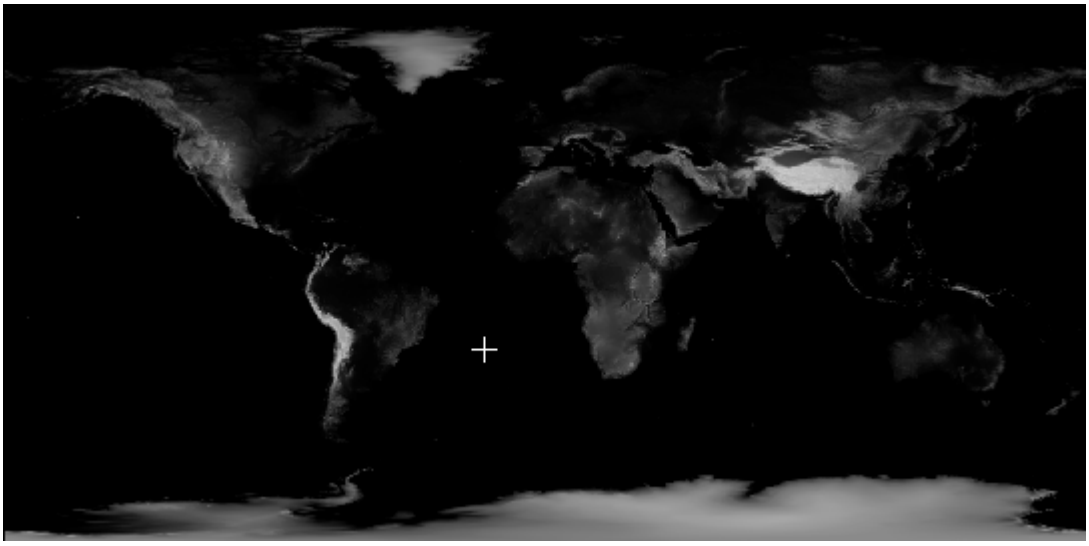


In the Image Panel press the Load Image button. Select the EarthBump.jpg image file. This file is located in the Globe.zip file.

Press the Material Buttons Sub-Context icon (or press F5 (Materials).

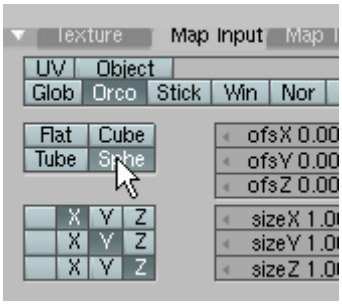


We will use this image as a bump map for the Globe object. A bump map is an image file that consists of shades of white and black only. Below is an image of this file:

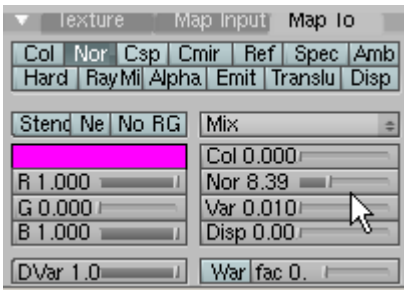


When a bump map is applied to the object's "Normal" (direction in which the model faces point toward) results in a "relief" effect. That is the lighter portions seem to be elevated and the darker portions seem to be lowered. This gives the impression of depth; even though the model's vertices are NOT actually moved.

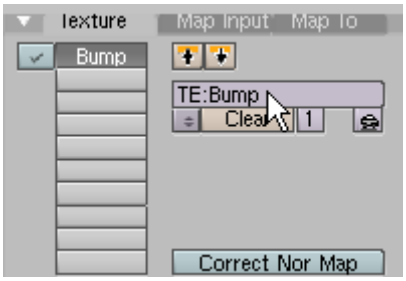
Press the MAP INPUT tab on the far right. In the map Input Panel set the mapping to Sphere.



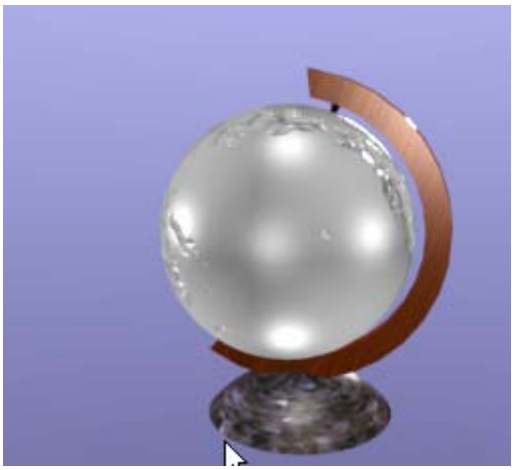
Select the MAP TO tab. In the Map To Panel Press the NOR button (which assigns the image to the object's Normals) and Press the COL button off (which will remove the image mapping from the Color channel). Make sure MIX is the selected Blending (which means that this texture will mix with other assigned textures). Set the COL slider, VAR slider and DISP slider to 0. Set the NOR slider to 8.39.



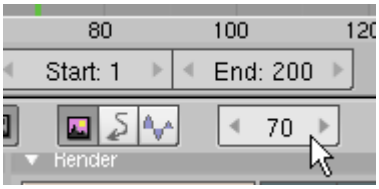
Select the Texture Tab. In the Texture panel name this texture Bump.



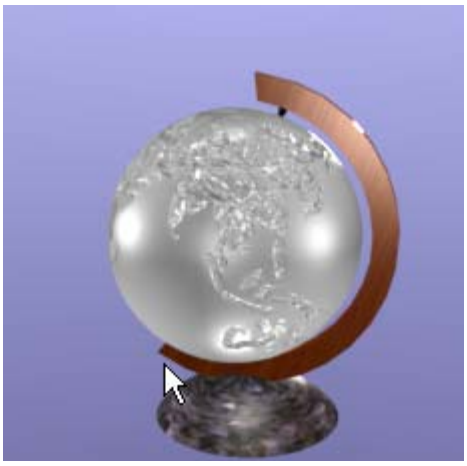
Press F10 (Scene) Render F12. **Note: depending on the speed of your computer this first rendering may take some time (on my slow computer it took a few minutes). However, successive renderings will be much quicker.**



If you rendered frame 1 (like the image above), you will see little of the relief effect because the part of the image facing the camera is the Pacific Ocean. Set the current frame at frame 70.



Render F12.



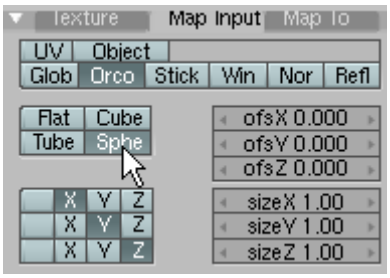
Here you see more of the relief effect. Not that this is all effect. The actual vertices of the Globe have not been moved.

We will now add another texture of the earth with colored areas. Press F5 (Materials). In the Texture Panel select the empty box below the Bump box.

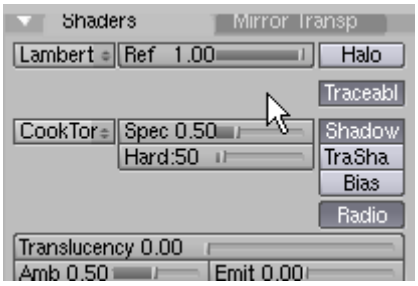
Press the Add New button. Press F6 (Textures). In the Texture Type dropdown box select Image. Press the Load Image button. Select the EarthMap.jpg image file. This file is located in the Globe.zip file.

Press the Materials buttons sub-context icon. (or press F6 - Materials).

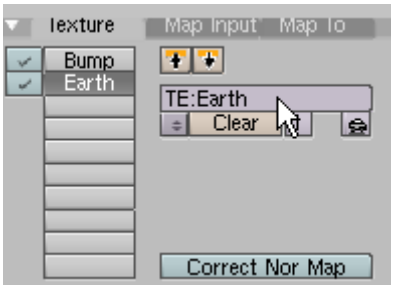
Press the MAP INPUT tab on the far right. In the Map Input Panel change the mapping to Sphere.



In the Shaders Panel set the REF to 1, set the SPEC to .5 and the Hardness to 50.

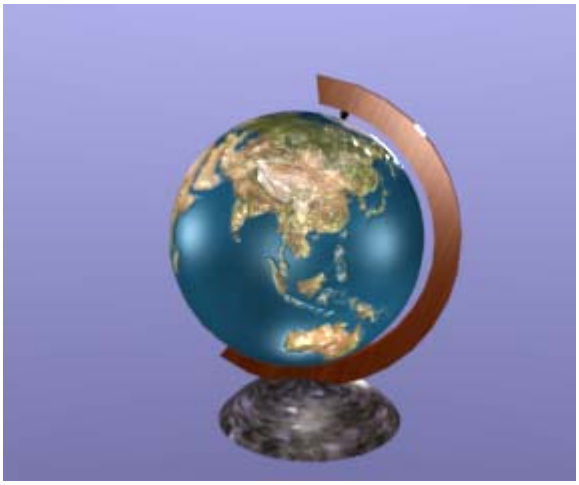


In the Texture Panel name this texture Earth.



Save your file CTRL-W.

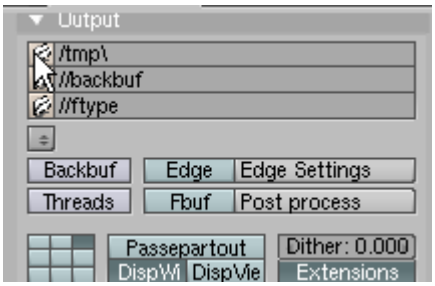
Press F10 (Scene). Render F12. **Note: Once again, depending on the speed of your computer this first rendering may take some time (on my slow computer it took a few minutes). However, successive renderings will be much quicker.**



The globe is now rendered with both the bump and image maps. Note: Both of these image files come to us courtesy of James Hastings-Trew (jhasting@sk.sympatico.ca).

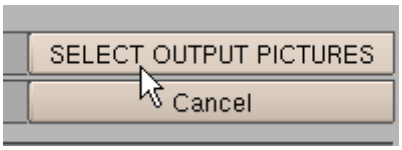
Next we will set up the Blender output for a QuickTime movie file. In the Format Panel use the file type dropdown box to select QuickTime. (accept the default settings)

In the Output Panel press the icon to the left of the first box.

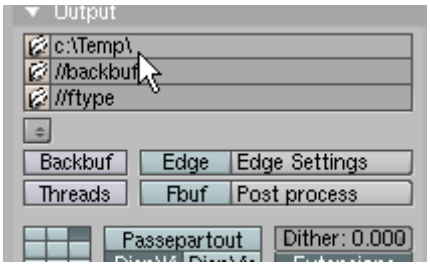


This allows us to choose a directory that will hold the QuickTime movie file. (I selected C: Temp)

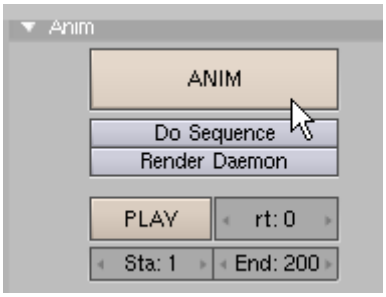
After selecting the destination directory press the Select Output Pictures button.



This sets Blender's output directory for animation files.



Note that we do not have to name this file. Blender will automatically name this file 0001_0200.mov and place the file in the output directory you have chosen. In the Animation Panel press the Animate Button.



Blender will render each frame in the display buffer and will place the 0001_0200.mov file in the output directory (Note: You can stop the rendering process at any time by pressing the ESC KEY). When finished you can play the animation in Blender by pressing the Play button or you can open the 0001_0200.mov file in your QuickTime Player.

A completed copy of this tutorial named GlobeComplete.blend is located in the Globe.zip file.