

Happy Holidays Tutorial

The goal of this tutorial is to get you used to using the various tools in Infini-D.

Topics covered:

- Importing DXF files
- Using the Lathe Workshop
- Creating Surfaces
- Composing Surfaces
- Manipulating Light Properties
- Using the Sequencer
- Animating Lights
- Animating surface properties
- Using Primitives
- Using Alpha Channels
- and so much more!...

Before you begin

First, you will need to download this [tree DXF](#). You will need to drag the downloaded file over your copy of Stuffit Expander in order to decompress it. Then double-click the SEA to expand the archive.

I. Importing a DXF model.

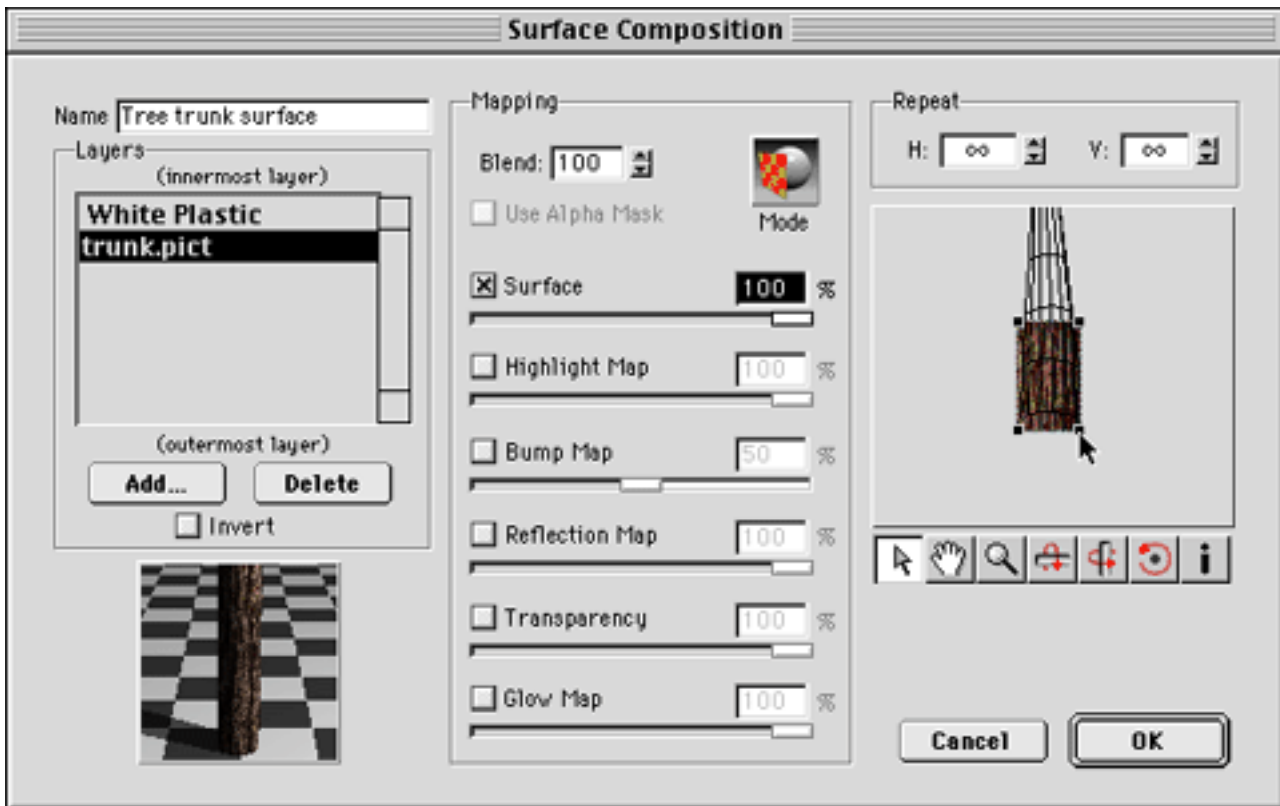
Note: DXF is a file type developed by Autodesk (yep, the makers of AutoCAD, 3D Studio and FormZ) which most 3D programs can import.

1. Open a New Scene file by selecting NEW from the FILE menu.
2. Go to the FILE menu and scroll down until you see IMPORT. A fly-out menu will appear. Select OBJECT... A dialog box will appear.
3. Make sure to change the menu at the bottom to read DXF instead of 3DMF. Locate your DXF file and hit the OK button (or the Return Key).
4. Another dialog will appear asking all sorts of stuff about smoothing angles and color info. Just hit Return. The default settings are what we need for this tutorial.
5. Depending on the speed of your computer, you may have to wait awhile for Infini-D to process the model. When the model appears in the view windows of your scene, you'll want to save your file. Go to the FILE menu and choose SAVE. Give your file a name and hit return.
6. Now, the DXF object is probably pretty large right now. You'll want to shrink it a bit. Open the Info floater by going to the Windows menu and selecting it from the list. In the Uniform Scale box, you'll want to hit ---. This should get you a size you can work with. Unfortunately, this particular tree model has very thin needles which are hard to see when rendered, so don't worry if your tree looks a little sparse--- it's the file, not you!
7. Once our tree is the size we'd like it to be, we need to texture it. Included in the archive is an image of some nice tree bark. It's not pine, but it'll work for this scene.

Composing a Surface

1. Open the Sequencer. It can be found under the Windows menu, just like the info floater. You should see a list of objects including one titled DXF Parent Object with a little arrow to the left of it. Click the arrow to see the child objects of the tree. Find one of the “bough” objects and click it once to select it. Now, find the Surface tab and select it to see the surface options. We want to compose a surface for the bough object, so we will click the COMP button at the top right of the tab.

2. When the Compose dialog box opens, you will see an area to the left that has a list of the current surfaces. The default surface is White Plastic. There are two buttons directly below this list. Click the ADD button. We want to load a new image, so we will choose LOAD IMAGE... from the top of the list. This will give you the normal open dialog box. You will be able to see all images, but you can only import certain types of images. Infini-D will convert photoshop images for you by flattening any layers and save a copy for you as a PICT file. Select the bark image and open it.



3. A new dialog box will appear (get used to this... 3D programs have many many dialog boxes. It's necessary if somewhat annoying). Just hit the Return key.

4. You can Okay the next dialog, too, until you are back at the original Compose dialog. Notice that your imported image is now on the list right below White plaster.

5. The area on the right, the Preview area, shows you the object and a low-res copy of your image. If you look at your object, you can see that it is shown from the top. We want to change that so that the surface isn't mapped over the top of the image, but from the side, and at an angle.

6. Underneath the preview window is a group of buttons that let you choose different tools to use in the preview window. We can select the rotate around the Z axis tool. Rotate the tree until it appears to be laying on its side. Then select the rotate around the Y axis tool and rotate the tree until it is about 45 degrees tilted to the left.

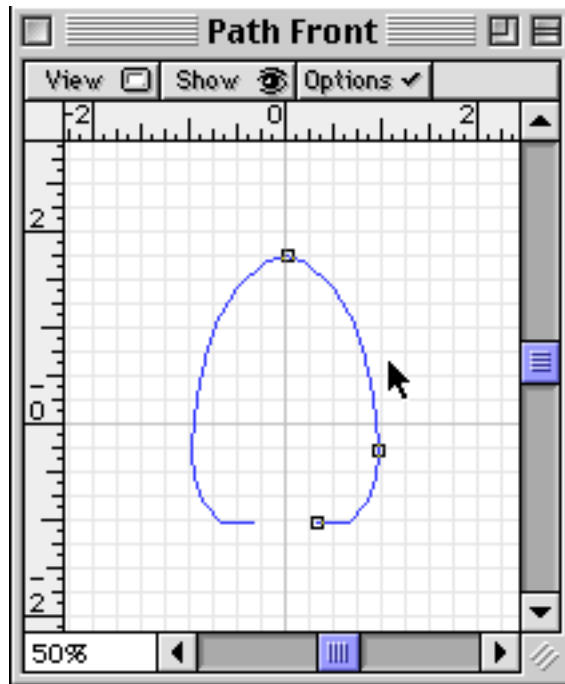
7. Now we want to scale our texture so it isn't too large for our branches. Holding down the shift key to constrain the proportions of the image, click the bottom right handle and make the image smaller. Shrink it until it covers just one of the branches fully.

8. Next, we want this image to tile enough to cover the entire object. Above the preview window are two boxes labeled X and Y. Enter a 0 into each and hit the return button. Notice how the 0 changes into an infinity symbol? Yep, you've just tiled that surface "to infinity and beyond!"
9. Now, give your surface a new name (like branch surface 1) and hit the OK button.
10. Repeat this process for the other Bough object (it is slightly different and needs its own version of the bark surface) and for the trunk (hint- the trunk just needs to be rotated away from you). Play around with the scale of the surface and the rotation of the object to get a better feel for what will look the best.
11. The green of the needles is just fine as it is (they are so hard to see that it would be pointless to texture them--waste of RAM and rendering time).
12. Finally, save this file again and close it. We will come back to it later.

II. Creating the Light model.

You might want to find an actual light to look at during this process. Notice the curve of the profile and try to think of the difference in the cross-sections from the tip to the widest part of the light and to the base of the light. Do some sketches to familiarize yourself with the object. (I had to go from memory, but I've looked at so many of the @\$%\$ things that they are forever etched in my brain!)

1. Open a new scene file as we did in the beginning of the last section (FILE-> New).
2. Choose the Lathe tool from the toolbar across the top of your screen (it's the one that looks like a wineglass), and place a glass in the center of the world (your coordinates in the Info floater should read 0,0,0 across the top row).
3. We need to edit this object in the Lathe workshop, so we will choose Edit Object... from the Model menu.
4. Now, we get popped into the Lathe workshop where we can edit this glass shape into all sorts of cool shapes. First of all, we want to get rid of everything that is there. So, pick the Arrow tool from the tool floater and drag around the object to select all of the points. Hit the delete key to clear it. You'll still have some points left in the window, so we'll go up to the _ menu and pull down until we get to ENDCAPS, and select NONE from the fly-out menu. Now, we have a clear spot to work.
5. Notice the grid in the window. The darker lines represent the center axes X and Z. There are rulers across the top and down the left side of the window. We want to start creating the profile of our object. Start at the top of the object and work your way down (easiest).
6. The Workshop uses Bezier curves, just like Illustrator and other vector drawing programs. Use the PEN tool from the toll floater to place your first point at the one inch mark in the at the center axis. Place the second at a bit above 0 and out to about 0.5, then pull out on the handles to make a nice curve as close as possible to the curve of the light. Then, place the third point a little below and closer the center than the previous point. You may get an odd curve between the second and third point. We'll take care of that next.



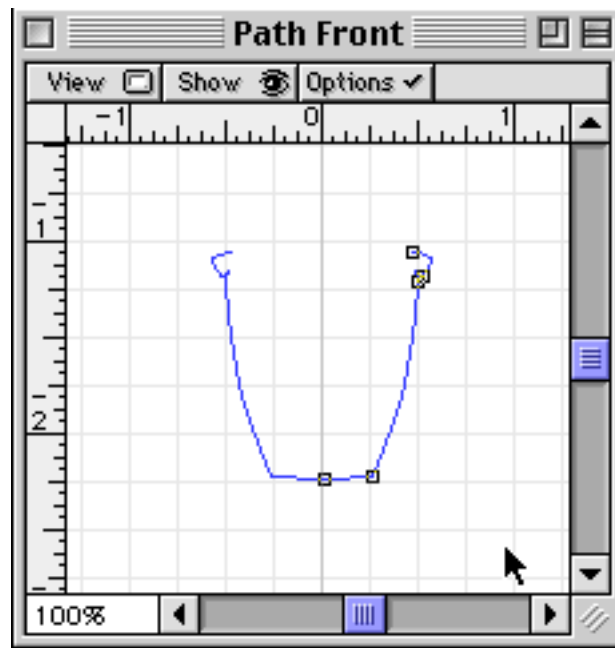
7. If your curve at the bottom looks a little funny, you'll need to tweak it. Select the second point with the arrow tool. One of the best things about Infini-D is the options they give you regarding the Bezier points. We want to change the point to a CORNER point. Go to the POINTS menu and choose CORNER. You can now manipulate the handles of the cornered point independently of one another. Grab the handle between the second and third points and shrink that icky curve.

8. Repeat this until your object looks the way you want it to look. Then Exit the workshop by choosing EXIT WORKSHOP from the FILE menu and save again.

9. Now we need to make a base for the light bulb to plug into. Select the light bulb object and go to the EDIT menu. Choose COPY, then PASTE. Choose EDIT OBJECT from the MODEL menu again.

10. Back in the Lathe workshop, we can see a copy of our light bulb object that we just finished. Select the PEN tool from the tool floater. Place your first point at the bottom of your original profile, at the place where the light bulb and the base meet. The original profile will disappear so don't panic when it does. Place the second point at about .75 down and a bit closer to the center axis. Using a copy of the first object to create the second object ensures that our objects will be in the correct proportion to each other and at the same coordinates.

11. When you have placed the second point, we will want to close off our object. We will go to the _ menu and choose ENDCAPS again, this time selecting ENDING from the fly-out menu.



12. Go ahead and exit the workshop again (FILE-> EXIT WORKSHOP).

Creating a New Procedural Surface

1. Now, our objects look pretty dull in white plastic. We want to texture these objects to make them look fairly realistic. We need to go back to the Surface Tab (palette).

1. In the surface tab, select NEW from the group of buttons at the right. You be dropped into the Surface Editor. Infini-D is really good at making realistic surfaces, but it takes some experimenting to figure out the proper settings for a specific effect. We want to make a transparent red glass surface with slight highlights.

2. First, we need to set the FLAT COLOR of the object. Infini-D Uses Apple's Color Picker (if you are on a MAC), so we will go the the Crayon picker and pick out full red. Hit the Return key to accept this choice.

3. Next, we need to reduce the Diffuse shading settings. Use the slider to get the setting down to around 40 percent (we can change this later if it's not enough or too much).

4. Set the Transparency to 97 percent. You should see a transparent sphere in the preview box. If the sphere appears a bit cloudy, reduce the diffuse shading settings. When you have a nice transparent red glass, you'll want to rename it in the appropriate box. Name it Red-off (you'll see why later).

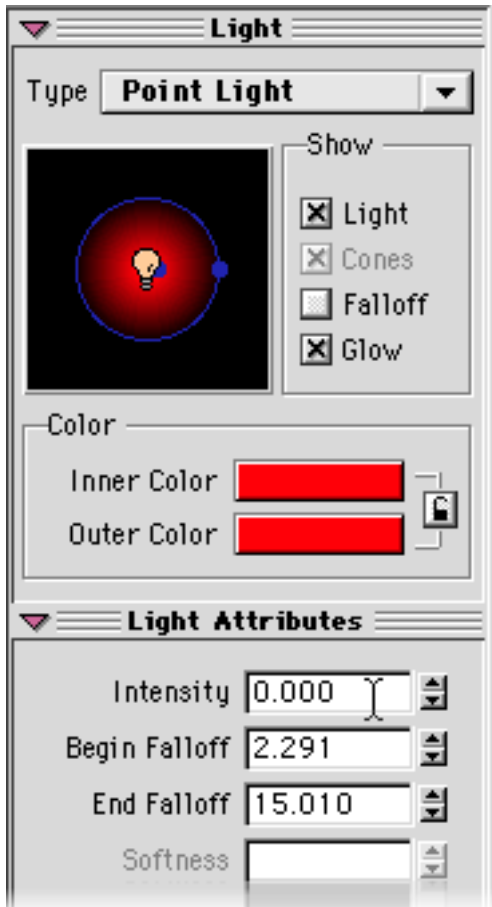
5. Apply this surface to the light by selecting the light and double-clicking the surface as it appears on the surface tab list (you can also drag the surface to the object).

6. Now, we need the green plastic for the base. To create this, we are going to modify the existing green plastic surface. Select it from the surfaces list and click the EDIT button (above the NEW button). We just want to make it darker, so we will edit the flat color. In the Picker, select the HSL picker and make the green darker. Hit the return key to accept the color, then hit the return key again to finish editing the surface.

7. Once the objects are shaded, we will link them together. Open the SEQUENCER. In the list of objects, locate the Lathe 1 object. You can change this name to Light Bulb, or red light bulb (in case you want to make other colors) in the Command floater (that huge floater at the left of the screen). Below it should be the second lathe object. Click the name of the second object and drag it over the name of the first object. A triangle should now appear next to the name of the first object, and when clicked, the name of the second object will appear under the first, and indented. This shows that the two are linked and that the second object is a child of the first object, or parent object.

8. Now, we need a real light to go inside the light bulb. Select the point light from the light fly-out on the tool bar. Place a light object at the same coordinates as the light bulb. Then, use the MOVE tool to move the light up to where the filament normally would go.

9. All lights are by default white lights, so we will need to change the color to red. In the Command floater, click the Object tab. You should see the options for the light. Under the light window, there is a place to set the color of the light. Make sure that the little lock icon is selected and click in the color area to open the Picker. Choose the red from the Crayon picker again (to make sure we get the same color) and hit the return key.



10. Below the top area, there are two more menus. Click the arrow beside each title to get more options. First, click the middle title. Change the intensity to 0 percent (we will change it back to 100 percent later). Change the inner cone to 2.5 and the outer cone to 11.5. Change the fall-off to 15.

11. In the next menu, you can set the shadow and glow settings. Choose SHARP SHADOWS from the pull-down menu and visible glow from the glow menu. We want a glow of about .05 (this will go with our later scale).



12. Link this light to the light bulb object. Once they are linked, select the parent object and choose COPY from the EDIT menu.

13. Save the file, then close it.

14. Open the file with the tree in it.

Combining the Two Files

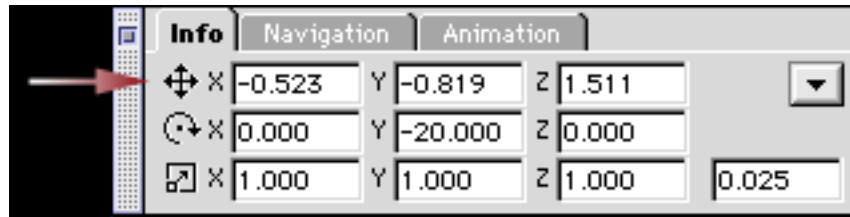
1. Once the tree file is open, PASTE the object into it. As you can see, the light bulb is just about as big as the tree, so we'll need to scale it down quite a bit. In the Info floater, change the uniform size to 0.025.

2. You will need to use the zoom tool to zoom in and move the bulb model to the right spot. Go to the TOP view window and find the model. Select it if it is not selected and carefully move it to a suitable branch. Use the front and right views to help position it so that it is barely touching the branch.

3. Now we want to rotate the light model slightly, so that it looks like it should (kind of pointing up and half leaning, like real holiday lights do). Get to the Info floater. The second row of boxes deals with the rotation of the object. We want to rotate it -15.00 degrees around the Y axis and 15 degrees around the Z axis. We will skip

making the electrical cable (that is a whole tutorial on its own).

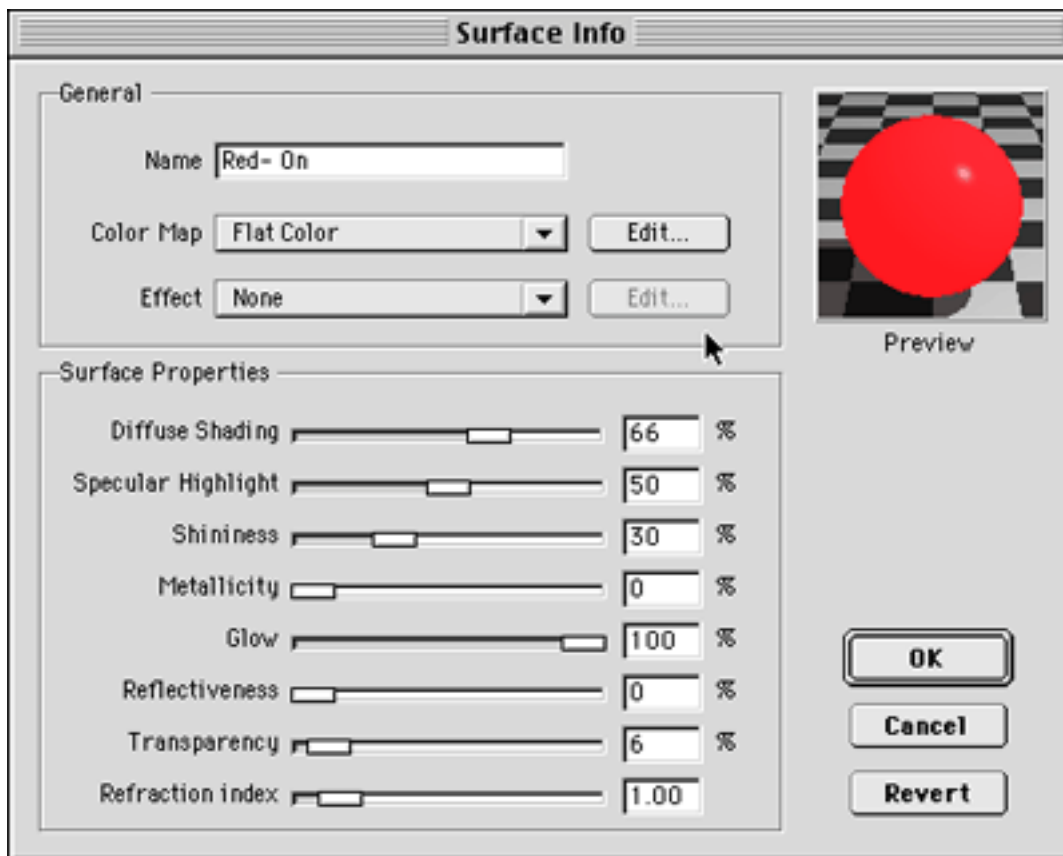
4. Once it's in place, we are ready to begin animating our blinking light. Note: You'll need to write down the coordinates of this object for later use. Go to the Info floater and copy the values in the first row of boxes. Go on to the next section.



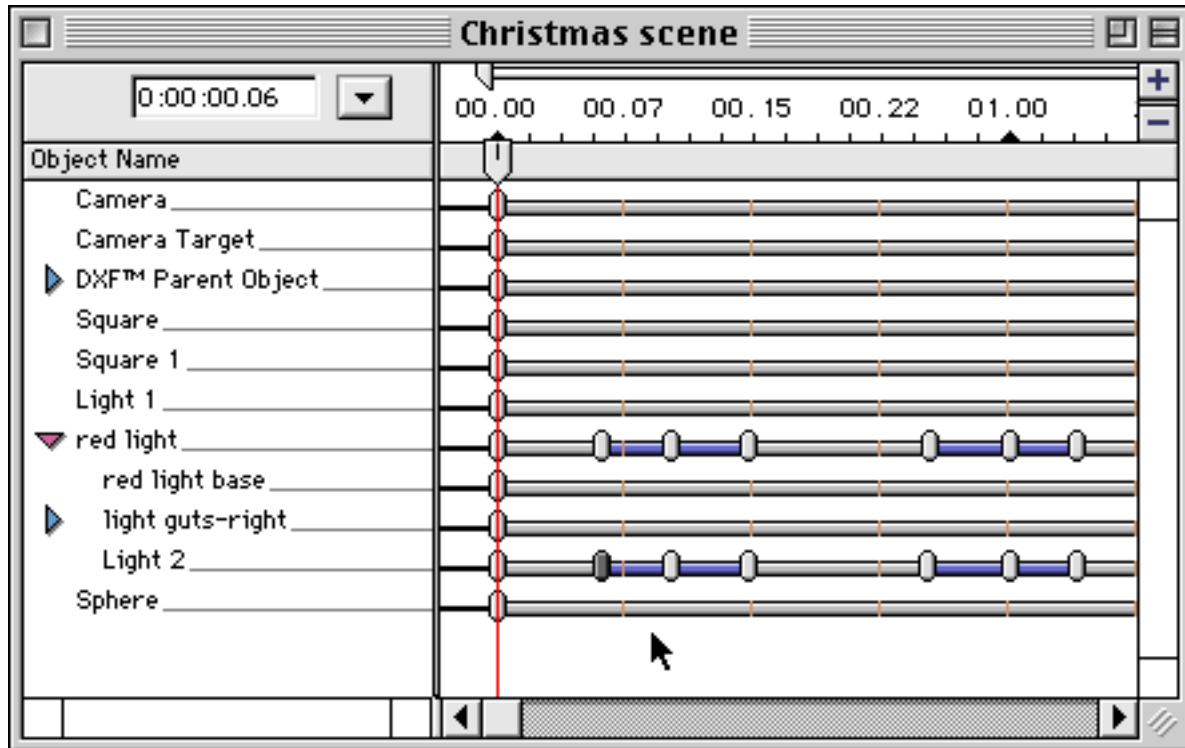
Creating our Blinking Light

1. Now it's time to put on the thinking cap and get out a pencil and paper. We need to decide how long we want the total animation to be, and how long we want the light to be on and off and the distance between those states. These lights blink fairly regularly, so we want to keep that in mind as we prepare to animate.

2. First, we need and alternate red glass surface. Select the red glass surface from the surface tab. Copy it (the button is in the same place as the others). EDIT this surface. Change the GLOW properties to 100 percent. Rename the surface Red-ON. Exit the surface editor.



3. Now we need to open the sequencer. (WINDOWS-> Sequencer) In the sequencer, you may have noticed the time marker (long, red, vertical line). Move this to the half second mark. Select the bulb object and apply the Red-ON surface. You'll get a new eventmark and a blue line connecting to the first eventmark. This indicates that some parameter has changed, in this case, the surface has changed. That's all well and fine, but we don't want the surface to change right away. So, we need to copy the first eventmark to make the change happen later and more quickly. Select the eventmark. Hold down the OPTION key and drag the eventmark to a little bit before the color change eventmark. Now the blue line is only between the second and third marks and is shorter in duration.



4. We can use this method of copying eventmarks to create the entire animation! Select the second eventmark and option-drag it to an equal distance to the other side of the third eventmark. Then, use the mouse to drag around the set of three eventmarks and option-drag a copy to the one second mark. Repeat this for how ever many times you want in order to fill out your projected length.

5. Now, we will repeat this with the red light. Move the timeline back to the half-second mark. Now, select the light and go to the object tab of the Command palette. Change the intensity to 100 percent (turn the light ON). Repeat the same process as above, using the color eventmarks to show where to turn the light ON and OFF.

6. Save your file!

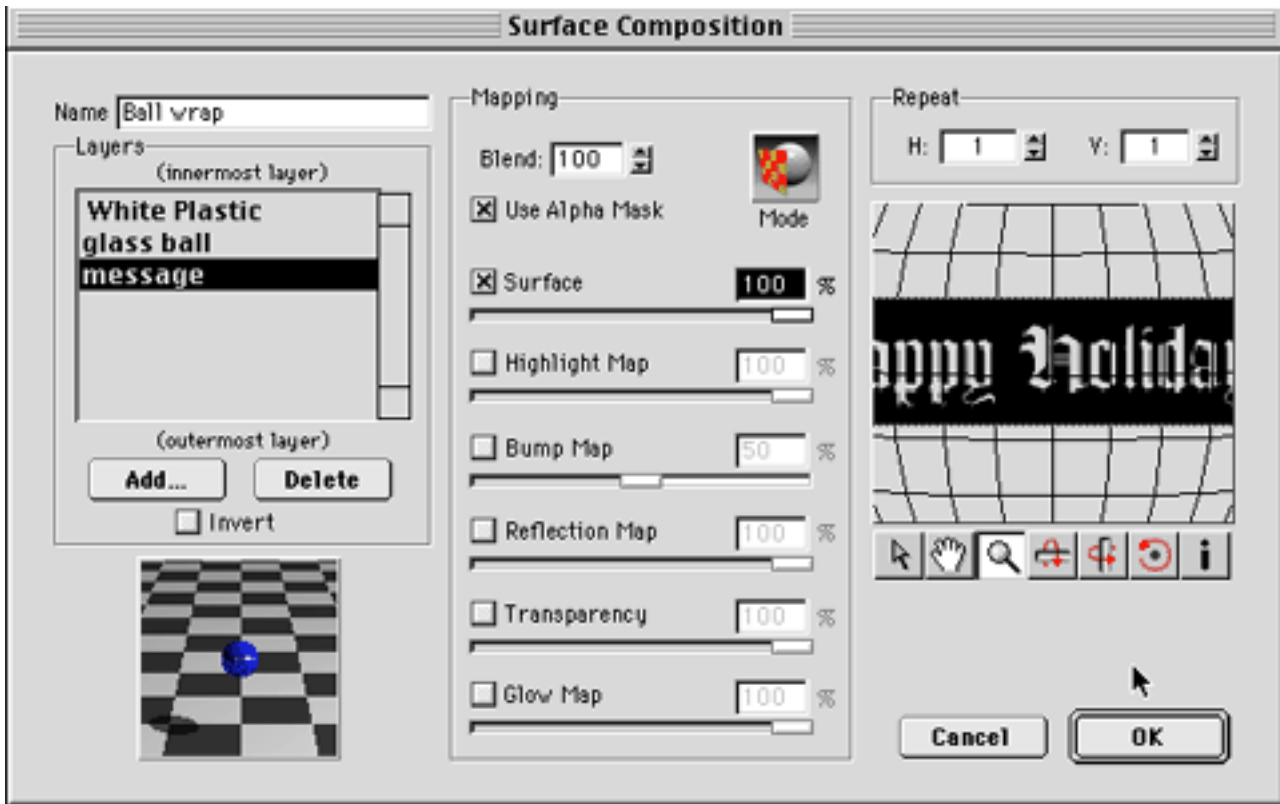
Finishing up

Now we need to finish up our scene. Make sure that the TIMELINE is moved back to the beginning of the sequencer!

1. Let's add a Shiny ornament with "Happy Holidays!" Printed on it. Select the Sphere primitive and place it so that it will be in the foreground of your scene with the light off to the side and behind it. We will not see the entire ornament, so keep this in mind when composing your surface. You will need to scale this sphere using the Info floater. Make it whatever size you want as long as part of it is off the screen.

2. Now we need to compose a surface for the sphere, but first we want to make a new procedural surface. Open the surfaces tab and click the NEW button. Edit the flat color. Pick a nice bright color, like blue or red or gold. Set the Metalicity to 85 percent and the reflectivity to 95 percent. This is will give us that nice metallic surface of a holiday ornament. Go ahead and exit the surface editor.

3. Next, click the COMP button. Hit the ADD button and choose the metallic surface you just created. Hit OK. Then add the next texture. Choose LOAD IMAGE from the list and find the "message" image file that you downloaded earlier. This file has what's called an Alpha channel. Once this image is loaded, select it from the list and click the ALPHA REVEAL box. This is immediately make anything black in the image transparent ("revealing" the underlying surface).



4. When you have this done to your liking, exit the Compose dialog and save.

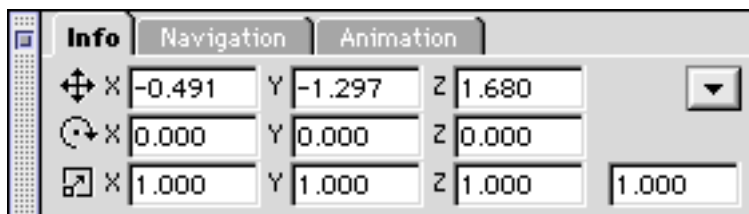
Cameras

Now we need to talk about cameras. There are two types of basic cameras in Infini-D, a non-targeted camera, and a targeted camera. We will use the default camera, which is a targeted camera.

1. Select the camera target from the sequencer. Open the Info Floater and copy the coordinates that you wrote down earlier into the appropriate boxes. This will point the camera directly at your light bulb. Later, you can move the target to create a more pleasing composition, but for now, this will work fine.

2. Now we need to move the camera in closer. Open the Top view window and select the camera itself. Move the camera until it is nearly touching the object. You can go into the front or right views and further adjust the view. Make sure that the light object and the ornament are in view. Do any adjustments now.

3. When you get a good composition, write down the coordinates and rotation of both the camera target and the camera. That way, you can try out several views and still get back to the good one.



4. Save again. Now we will move on to rendering!

Rendering

The best part of 3D modeling is the final product! Now we will render our animation and see how it worked. You might want to render a test first at a smaller size and lower quality. Then, you can make sure that the action is correct before committing to a final render.

Low- quality render

1. First, we will render a preview at 160 x 120 pixels. Go to the FILE menu and choose RENDER. A dialog box will appear. On the first tab, you will find the quality and effects settings. Set the quality to ray-trace (we need accurate light info), no anti-aliasing, no transparency. The only thing that should be checked in the right hand list is the light glows (so we can check those out, too).

2. Next, go to the second tab. There you will find the size parameters at the bottom. Choose 160 x 120 from the list.

3. Go to the third palette. Make sure that the animation is set to render for its full length, and that the fps (frames-per-second) are at 15 instead of 30.

4. Hit return to start rendering. You'll be asked how you want to save the file. Choose QuickTime and check out the OPTIONS button. Select ANIMATION as your compression and MILLIONS as your color depth. Go get something to eat or drink (about 15-20 minutes, depending on how much of the tree is shown and other parameters) or go outside if possible (but if you are in the public lab, stick to your seat or "You will be logged off shortly"). Be prepared for a lot of jagged edges and stuff. That's because the anti-aliasing was turned off.

Did your animation look the way you wanted it to? Are there some things you want to change? Go ahead and do it now.

Okay. Ready to get down to some serious rendering? If you're at ISU, you'll need to talk to Mike Miller about leaving your rendering on any of the machines all night (from 1:00am to 8:00am). Believe me, it could take a lot longer than 7 hours to render this baby (my estimated time at 320 x 240 means that I'll be rendering at a smaller size!-- 15 hours!).

1. Choose RENDER from the FILE menu again. This time, set the anti-aliasing to high and the transparency and reflection on at 2. Make sure that the light glows and shadows are turned on. Set the size to 280 x 210 and leave everything else the way it was for your test render. Go have a long nap. Get out into the real world! Come back and find your gorgeous render done!

That's it! We have now finished this tutorial and can turn off the computer and not look at it for another day! Now, you can apply what you learned here today to all of your future projects!

12-3-98 Jennifer Nieland

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