

► Create Rear-Illuminated Ads

With Blender and Indigo

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Tutorial for users of Blender and Indigo to create illuminated adverts in an enclosure.

Software required:

- Blender (at least 2.43)
- Indigo (at least 0.7 test 7)
- Blendigo exporter script (version 7 beta 1)

Downloads:

- Blender: <http://www.blender.org>
- Indigo: <http://www2.indigorenderer.com>
- Blendigo script: <http://www2.indigorenderer.com/joomla/forum/viewtopic.php?t=1302>



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The purpose of this tutorial is to show you how to create a rear-illuminated advertisement board. The type of advert found in cinema lobbies and underground stations. I am assuming that you have basic modeling skills in Blender and you have installed the latest test versions of Indigo (0.7 test 7 at time of writing) and Blendigo (0.7 beta 1 at time of writing) installed on your system.

The effect that we are attempting to achieve is shown in **figure 1**.



Figure 1: Final Image

So, let's get started.

Create Enclosure

Start Blender. We will use the default cube to create the enclosure for our poster. If you don't have a default cube, delete whatever objects are in the scene apart from the camera, and add a cube in top view. Split the view so that you have the 3D view on the left of the screen and an empty panel on the right. Make the empty panel a scripts window and start the Blendigo exporter with the cube still selected. Your

screen should now look like **Figure 2**.

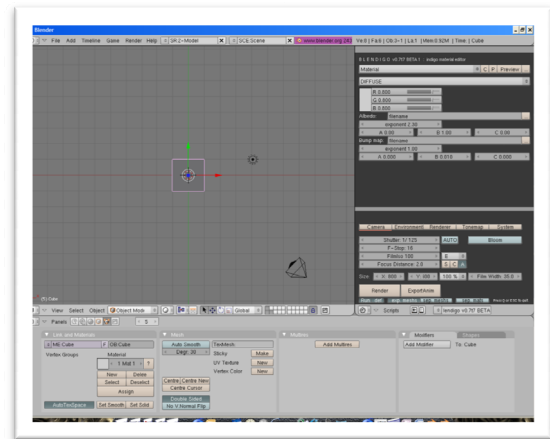


Figure 2: Screen Layout

The reason for the enclosure is to stop the light bleeding out all over the room. We need it to come out through the poster.

Open up the Transform Properties window in the 3D view by pressing **N** so that we can enter accurate dimensions. This is a necessary step as Indigo works with real world units. One Blender unit is equal to one meter in Indigo. And we will be using sub-surface scattering in this project, which is very dependent on the scale of the objects.

Now, go into edit mode and face select mode. Select the front-most face of the cube and extrude it **E** then apply the extrusion (Return or left click) and then scale it **S** by a factor of .9 and press Return.

Back into object mode, enter the following box dimensions into the Transform Properties window.

- DimX=1.2
- DimY=0.15
- DimZ=1.8

Before we go any further, apply the scale and rotation to the object **ctrl+A**.

Extrude the face again but this time move it close to the rear face of the cube. Press return or left click to apply. The enclosure is now ready (**Figure 3**).

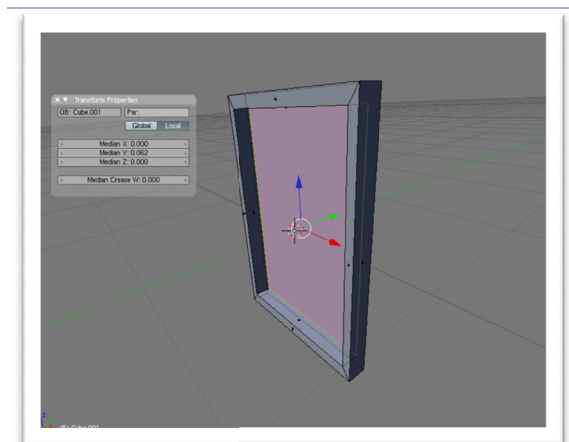


Figure 3: Completed Enclosure

At this point, it might be a good idea to name the object, mesh and material with something relevant. Something like, oh, I don't know, enclosure for the object and framework for the mesh and paint for the material.

It's up to you, but make it relevant so that you understand what everything is when you come back to it. If the object hasn't got a material assigned to it (which is most likely), select the material called "material" and rename it.

In the Blendigo window is where we create the material that Indigo will render. The actual material for the enclosure is not particularly important to this project so I would suggest just changing it to a phong material and change the IOR (index of refraction) to 1.05. IOR controls how intense the reflections are. Exponent controls how sharp the reflections are.

The Backlight

The illumination is provided by a simple plane with its normal facing forward. Making sure you are in object mode (otherwise the new plane will be part of the enclosure object), go into front view and add a plane. It has to be done in front view so that we know the normal is facing toward the front. Indigo emits the light in the direction of the face normals.

Now scale the plane to fit inside the enclosure and place it very near the back of the hole. Name this object + mesh "illumination" or something similar and assign it a new material called "signlight"

Feel free to assign your materials with colours in the Blender material panel, to make things easier to view.

As before, in object mode, apply the scale and rotation to the object **ctrl+A**. Your backlight is now complete. To make sure it's in the right position, go to top view **numpad+7** and wireframe view **Z**. It should look something like **figure 4**.

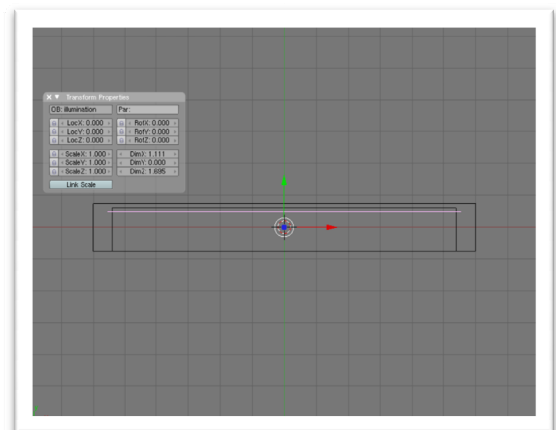


Figure 4: Position Of Backlight

In the Blendigo window, change the material type to light. Leave all settings as they are (you can change the RGB settings a little if you want to change the colour tint).

The Poster

The final object to add for the poster is...

The poster!

With the backlight selected, press **shift+D** to duplicate it. Now move the new object toward the front of the enclosure. Name this object + mesh with something like "poster" and apply a new material to it. Name the material something really original, like "poster".

For the picture to appear properly, the poster has to be UV mapped. Put the 3D window in front view **numpad+1** and switch to UV Face Select **F**. As there is only one face, the mapping process shouldn't be too difficult. Select the face with the right mouse button. Change the script window to a UV/Image

Editor window.

If you haven't already saved your project, save it now **ctrl+W**. I called mine "poster.blend". Choose a picture from your hard-drive to use as a poster and place it in the same directory as your .blend file. Now go back to Blender and, in the UV/Image Editor, press **alt+O** to open a new image. Select the image you placed in the directory.

When the image appears, scale the face to enclose it completely. Your poster is now UV-mapped. Change the UV/Image Editor back to a script window and re-open Blendigo.

Blended poster material

By default, at the moment, Indigo does not allow texture maps on transparent objects. The workaround for this is to use two materials blended together. A texture for the colour and a transparent material to let the light through. This is called a blend material in Indigo.

To use it, you have to create two separate materials with the properties you need. First, we'll do the colour on the material "poster".

Make sure the material "poster" is selected in the Blender material window. In the Blendigo window the material type should be diffuse. This method should work with a phong material too, but diffuse is sufficient. At the end of the Albedo field (that's the colour map) there is a button with three dots. Click this and select the image you have chosen to be your poster. Your colour texture is now complete.

To make sure that this material gets saved with your project, as it won't actually be physically assigned to an object, click on the F button at the end of the Link to datablock field (**figure 5**).

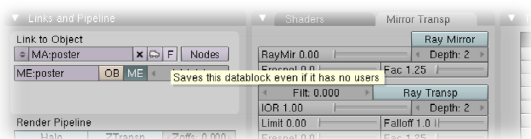


Figure 5: Make sure material gets saved

Now, create a new material in the Blender material window and call it clear. This will be the transparency material which lets the light through. It also scatters the light within the medium of the poster. You'll see this effect if you shine a torch through a sheet of paper.

In the Blendigo settings, change the material type to Specular and enable the Transparency button. Set the IOR to 1.05 and the absorption to mid grey (R, G and B all at 0.5) with a gain of 1.

And now for the scattering. Enable the subsurface-scattering button and set the R, G and B sliders to 0.5. The scattering for paper needs to be pretty high so set the gain to 10000.

Once again, click on the F button in the materials window to make sure the clear material gets saved out as it will not be attached to any objects.

The final part for the poster is to tell Blendigo to tell Indigo to mix these materials and how much to mix them by.

In the materials buttons, create a new material. Call it posterblend. Now select the Blend type material in the Blendigo window.

For mat.A, select the poster material and for mat.B, select the clear material. Set the blend factor to 0.1. This will give lots of colour and enough transparency to let some light through.

The poster and enclosure are now all complete. All we need now is a floor to show how nice and shiny our poster is.

Final touches

In front view, select all objects (press **A** twice) and move everything up (press **Z** to lock to the Z-axis) by 0.9 units. You can actually type 0.9 after locking the z-axis to do this precisely. Now, hopefully, your 3D cursor is still at the origin. If not, put it there.

In top view, add a plane, and scale it by about 5. This is the floor. You can either choose the paint material or create a whole new one, but be sure to change

the Blendigo settings for Indigo.

Select the camera, and press **numpad+0** to go to camera view. Move the camera around to get a nice view of the scene (**figure 6**). To make the scene more complete, you could model some walls. I think I'll let you work out how to do that yourself.

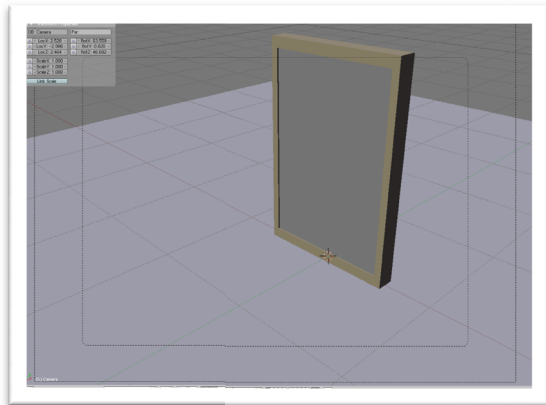


Figure 6: Final Scene before render

Now to set the Blendigo settings for rendering. The camera settings can be left pretty much default as can environment. If we chose physical sky, we'd need to add a sun-lamp, and it would pretty much wash out the light effect of the poster. So leave environment as None. Don't add a ground plane.

In Renderer settings, turn on Bidirectional and choose as many threads as you have processors in your CPU.

For tonemapping, I generally use Reinhard and set Burn to 6, Prescale to 4 and Postscale to 1. For more information on tonemapping, visit <http://www2.indigorenderer.com>. Leave the system settings as they are.

At the bottom of the exporter, below "Render" and "Export Anim", are the "Run" and "def" buttons. Please make sure you have the exporter installed properly before you go any further (check this thread for help on installing: <http://www2.indigorenderer.com/joomla/forum/viewtopic.php?t=1302>)

Make sure the "Run" button is active and the "def" button is inactive. "Run" will start Indigo when you

click on render and "def" will give your file a default filename. If you use def, Indigo will be looking in the wrong place for your picture and will fail.

OK. Everything is now ready to start rendering. Click on Render, choose a file name (such as poster.igs), click on export and hopefully, everything will work (**figure 7**).

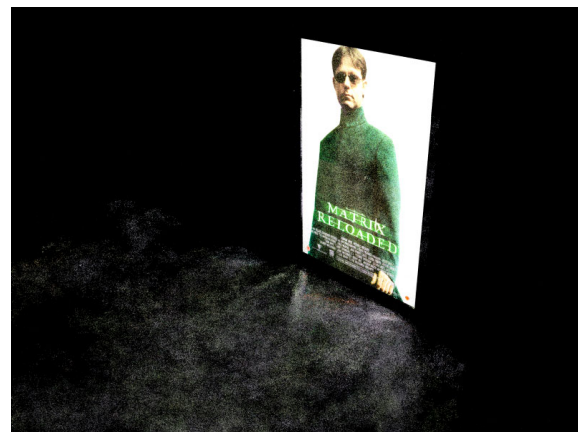


Figure 7: Final Product

That's it. The end of my first tutorial. Thanks for reading and I hope you found it helpful.

DaveC
