

A Tutorial Written By Brad Myers  
And Props to Pior Oberson

## UVW Transfer Texture Tutorial, with 3ds Max: (Skill level: For Everyone)

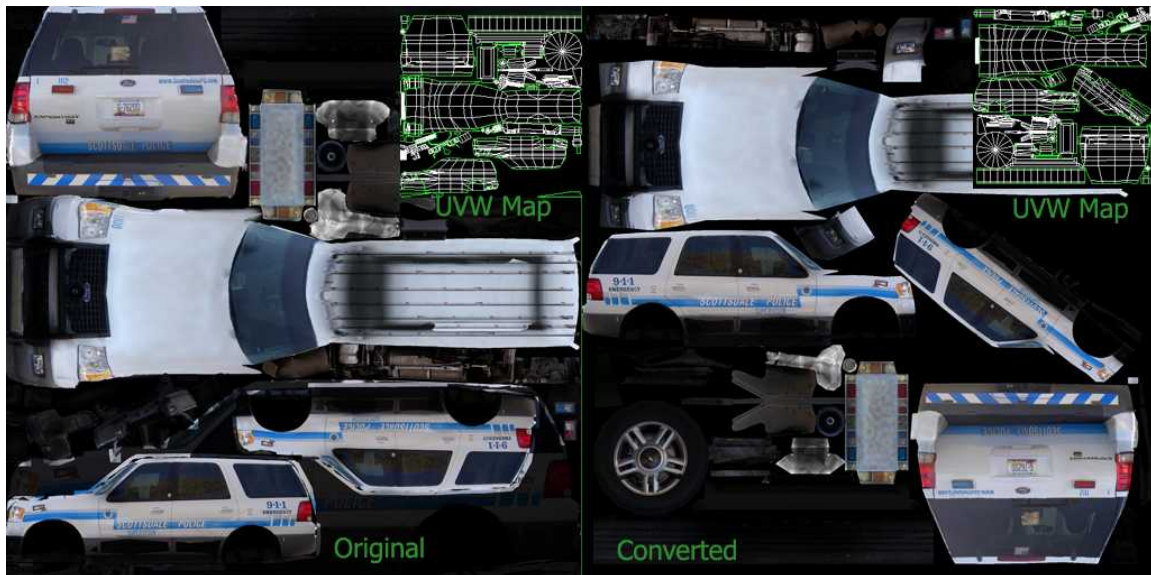
5/28/08

**Preface:** Many people have the misconception that if you mess up your UV's on a model and realize it after the texture work is finished, that you simply have to start from scratch. I myself believed this to be true; however, today I discovered a technique that Pior from Polycount.com brought to my attention. I was so floored by the strength of this method that I immediately began writing this tutorial to share with everyone else.

Messing up UV's early in ones workflow and then later realizing it, used to be a terrible thing as one would have to recreate the UV's all over again. Furthermore, any texture work already done would be lost as it would no longer perfectly match the UVW space. So the artist could either "A", move the textures to fit the new UV's in a program like Photoshop by cutting and pasting (which is terribly time consuming and yields poor results in most cases). Or "B", they could trash all the texture work, and start from scratch. However, one can actually convert the original textures from one UV setup to another by following this simple tutorial. If you are like me, this means several Meshes and texture maps that you have hidden away somewhere (due to embarrassment) because you misplaced UV's; are now easily fixed, meaning you can bring them to the light once again!

Here is an example of converting from one texture space to another:

In this example I mixed up the UVW spots in all different places. As you can see, the texture has been moved perfectly to match the new UV setup by utilizing the method in the following tutorial. This took about 5 minutes time to convert!



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Forward: This tutorial requires the use of the render to texture dialogue in 3ds max, if you are familiar with this application then this process will be all the more easier. Therefore, advanced users will be able to read the following below and have no problem using the methods described.





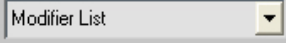


Here is what must be done in a nutshell.

1. Gather the original mesh with the bad UV's (we will call "mesh A") and the mesh with the fixed UV's (we will call "mesh B").
2. Save Mesh B's UVW layout by applying an "Unwrap UVW" Modifier to Mesh B, and save the UV's by pressing the "Save" button.
3. Select Mesh A again (Mesh B is now unneeded) and apply an "Unwrap UVW" modifier on Mesh A. Under the "Channel" section of the "Unwrap UVW" Modifier set it to "2". A warning will most likely come up, and just press "OK".
4. Load in the saved UVW's from mesh B by pressing the "Load" button in the "Unwrap UVW" modifier. (This sets up Mesh A so it now has the old UV's stored as Channel 1 and the new UV's stored as Channel 2).
5. Make sure Mesh A is selected, and bring up the render to texture dialogue by pressing "0".
6. In the render to texture dialogue under "Output" select Diffuse Map. This will reproduce the correct colors for any map you are trying to recreate. For example, do not choose Normal map when converting a normal map texture as it will mess the texture up.
7. Under "Mapping Coordinates" "Object" should be set to "use existing channel" and 2 (from the dial) should be selected. (It is set like this, so it re-bakes the texture map with the new UV setup from channel 2).
8. With this method you will not even need a projection modifier set, so leave "Enable" unchecked. (This is great, because there is no cage to set, therefore no raycast errors).
9. Apply the texture you wish to convert to a material in the diffuse slot of the material editor. Once your texture is applied to a material in its diffuse slot, apply the actual material to Mesh A.
10. Bake your new texture map by pressing "Render" in the "Render To Texture" Dialogue, then repeat for your other maps. That's it, your are done!

Once familiar with this process it should only take a few minutes to transfer any texture to the appropriate UVW setup. If any of this is still confusing follow the tutorial below...


-Many people often find mistakes with there work after the fact. It is all too common that this happens with UVW setup. However, there is now a simple solution to fix your UV's while still having your textures match up accordingly. In the following tutorial we will cover a process that will enable you to quickly and accurately convert texture maps with one UVW setup to another texture with a different UVW setup.

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1. First, take your Mesh with the bad UV's and clone it (Right click, and select "Clone").  
-Select Copy among the radio buttons and label it "UVW\_Fix".
2. At this point you may want to go to the "Layers" tab (click on it)  and create a "New Layer" (click on this) .  
-Title the Layer NewMesh and the "UVW\_Fix" mesh you just created will be added.  
-This is a nice setup to have because at anytime you can go to the layers tab and hide or unhide this mesh by clicking on the "Hide" symbol .  
-You can also select the mesh by clicking the "Select" symbol  when the name of the mesh is highlighted.
3. Now that you have your original mesh backed up with "UVW\_Fix", you can now edit its UVW setup. The UVW's can be changed in any way you see fit as long as they stay within the same original block of UVW space. Chances are you will be scaling things up, rearranging items, and welding pieces to fix seams.  
-In 3ds Max this is done by going to the "Modifiers List" in the top right hand part of the screen,  and clicking on the arrow for the drop down list.  
-Now that the list is open select "Unwrap UVW". This places an Unwrap UVW modifier on the stack and if you look to the right panel under the Modifiers tab. – and directly below the "Parameters" section there is a "Edit" button . Press this to open the "Edit UVW's" editor.
4. Once the "Edit" button is pressed it will bring up the "Edit UVW's" editor, where you can make all the necessary changes to your UVW's. I won't go into the details of editing them; that is another tutorial all together. However, for most of you with knowledge of UVW's, this is the time to edit your UV setup so that they are placed most effectively.
5. Once your UVW's are set, you will now need to save them.  
-look in the Unwrap UVW dialogue of your UVW\_Fix mesh for the "Save" button , under "Parameters".  
-Press "Save" to save your current UVW layout to your hard drive for later.  
-You can now Hide the UVW\_Fix mesh as you will not need it anymore.  
-Right click in the viewport and select "Hide Selection".
6. Now that you are finished UVW mapping, its time to convert the old texture maps (in the old UVW setup format), to your new UVW setup you just created.  
-Start by showing or "un-hiding" your original model in the viewport (the one that had the bad UV's).

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7. Go to the “Material Editor” by pressing “m” on your keyboard.

-Select an empty material slot by clicking on the grey sphere .



- Click on the grey box next to “Diffuse:” as shown.
- This brings up the “Material/Map Browser”. Select Bitmap from the top of the list.  and press “OK” at the bottom.
- Now browse to the texture map you want to convert. This can be anything (Normal Map, Diffuse Map, Specular Map, Emissive Map, Opacity Map...)

8. Apply the new material to your **Original Mesh**.

-Do this by selecting your original mesh in the viewport and press “Assign Material To Selection” in the “Material Editor” .

9. If everything below has been done, press “0” on your keyboard to open the “Render To Texture” dialogue.

\*\*\*First off, make sure you have your Original Mesh selected.

Once again, have your UVW\_Fix mesh Hidden as you no longer need it. If there are any lights in your scene, delete them as they may mess up the texture colors. Also, the Original Mesh should have a diffuse map slot filled (via the “Material Editor”) of the texture map you wish to convert (remember it doesn’t have to actually be a diffuse map that you convert, it can be any kind of map).

### **(The Tutorial Continues On the Next Page...)**

\*\*\* Below are the steps necessary for properly setting up the render to texture dialogue, and ultimately “baking”, or converting your texture maps to the new UVW layout that was created with the UVW\_Fix mesh.

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10. A. (1.): **DO NOT**, Check Enable under Projection Mapping. Make sure it is **Unchecked!**

B. (2.): Normally when using this dialogue the user will need to have projection Mapping Enabled, however; because we are not using it in this tutorial, steps 2 can be skipped all together. (Therefore, you do not have to press the pick button).

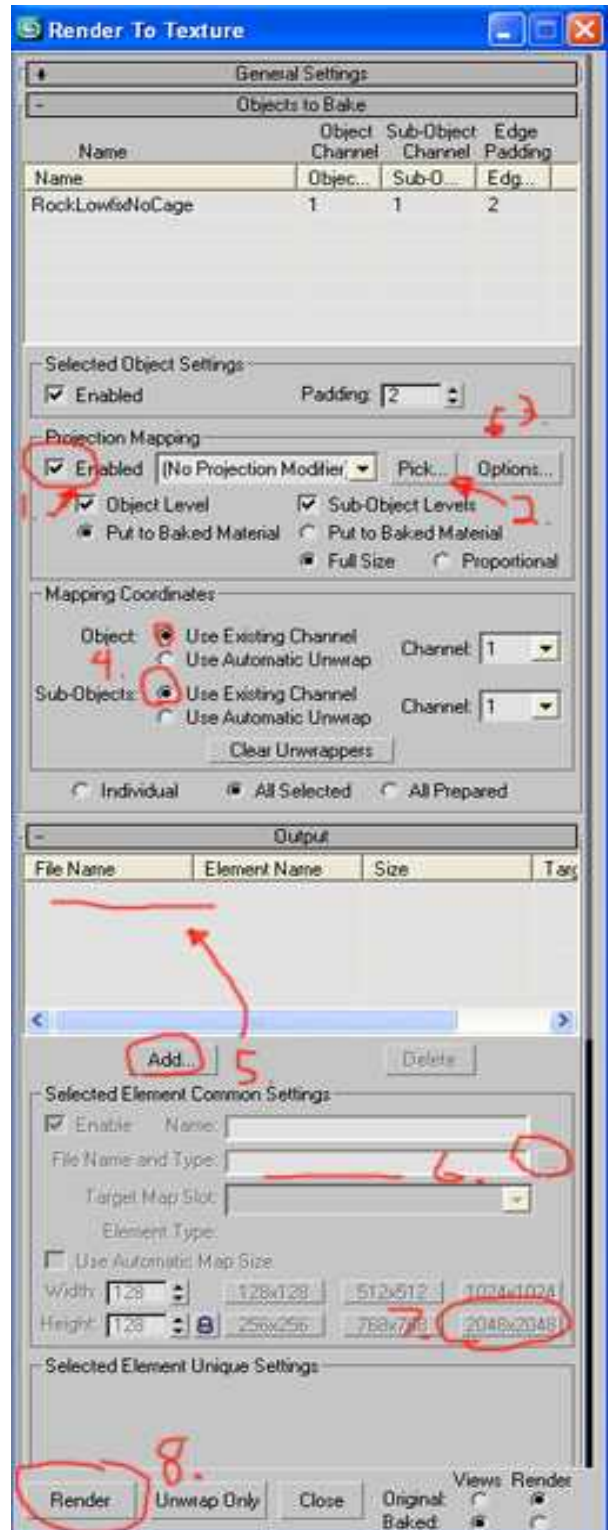
C. (3.): Click the “Options...” button and follow the directions on the next image below. (On the next page titled: “C. (3.): (Continued)”)

D. (4.): Make sure that the “Use Existing Channel” radio buttons are ticked under Mapping Coordinates. Also, set the “Channel on the right to 2.

E. (5.): Press the “Add...” button under Output. Another dialogue will come up allowing you to select various types of maps. Choose “Diffuse Map” and press the “Add Elements” button to close this dialogue. You will now notice that the name of the map, “Diffuse Map”, and size of the image to be rendered is all listed in the field marked with a red line. This should make it clear that you have it set correctly.

F. (6.): Under the “File Name and Type” section you can browse and save the file under the name you want, where you want.

G. (7.): Here are the various dimension buttons. Your best option is to choose the same map size you original used (with your original texture maps), but you can select other output sizes if you want.

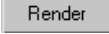




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\*\*\*At this point you should have...

- Your Original Mesh selected
- Your default max lighting (as all lights in the scene have been deleted).
- A material that you created with its diffuse slot filled with the texture map you wish to convert.
- That same material applied to your Original Mesh.
- The original mesh should have 2 channels containing 2 sets of UVW maps, the first with your original UV's and the second with the loaded in UV's from the UVW\_Fix mesh.
- The Render To Texture dialogue should be set without Projection enabled, set to output a Diffuse Map of your original texture size, and the channel output should be set to 2.
- The Render To Texture dialogue should be open, and you are prepared to press "Render" and watch the magic happen.

14. If you have done all of the above press the "Render" button  in the Render To Texture Dialogue (at the bottom).

- With this, you should be done. If you open up the map in the place you choose to save it, you should see that it is perfectly converted to the new UVW space.
15. If you have other maps to convert, simply follow the same process and place them in the materials diffuse slot like you did in step "7.". Remember, you can convert any map in this manner as it simply re-maps the colors of the original texture, to the new UVW texture space. So try putting a normal map in the diffuse slot of the material and give it a whirl. It should work fine! Once you know how, it's really pretty simple and straight forward.

Possible problems:

Your normal map is damaged or showing bad results now:

- You most likely did not have the Render To texture Dialogue produce a diffuse map. Remember, you are only transferring the current color information, not attempting to recreate normals. If you selected a diffuse map output correctly, then your normals green channel may be inverted. In this case, you will need to open your map in photoshop and invert the green channel once again. This was most likely due to mirroring something that was not previously mirrored when you altered the UVW setup.

If parts of your map come out black:

- You probably are not looking at the correct map. The render screen that comes up when you press "Render" will not look the same as the texture you are saving.

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Therefore, when it renders the map it will be shaded. You have to open the file you saved (where ever you specified in the render to texture dialogue in “Part 10. F”) by browsing to where you saved it to see that actual effects.

If you textures come out all wobbly or like it is pixilated and scratched with black in places or it is red in places:

-You probably have enabled projection mapping. This sets up a cage for you and will produce adverse effects. Disable the Projection mapping as you will be perfectly projecting the texture from the original mesh upon its own self.

- I hope you have all found this tutorial helpful, and possibly learned something new. I know that personally, this was a huge discovery; and I wrote this tutorial as an attempt to save everyone many headaches and wasted time. If you have any further questions, I can be emailed at [bgauge@hotmail.com](mailto:bgauge@hotmail.com). As always my website is: [www.ICantBelieveItsNotHighPoly.com](http://www.ICantBelieveItsNotHighPoly.com) where you can check out other tutorials that I have created and find the latest info on my career progress.

Sincerely,

-Brad Myers