Texturing Polygons

UV Mapping and using Photoshop to create textures

"Some excerpts and definitions used were taken from the help section in Maya."

There are many different ways to create textures for polygon models. The way I will show you may not be the correct way to do this, but it is easy and effective. Throughout this handout I will attempt to show you how to select various parts of a polygon model and apply textures to them. For those of you who have looked into this, we will not be sewing UV's or anything like that. Like I said, this is a simple way to do complex texturing on polygons. For this example I will be using a car that I am modeling. It is a work in progress but will suffice for what I will try to show.(Fig.1)

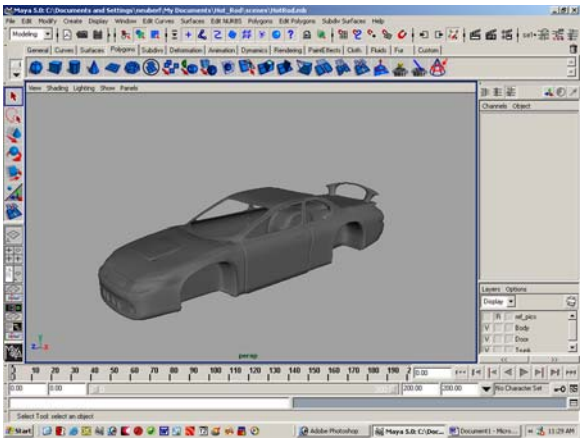


Fig. 1.

Now, in order to assign textures to individual components there are a few things you need to know. First we need to assign a texture map to the various parts. There are three types of maps, located at *Edit Polygons* > *Texturing* > …… The three types of maps are:

1. **Planar Mapping:** Planar mapping projects UVs onto a mesh through a plane. This projection is best for objects that are relatively flat, or at least are completely visible from one camera angle.

2. **Cylindrical Mapping:** Cylindrical mapping maps UVs by projecting based on a cylindrical or spherical shape wrapped around the mesh. These projections are best for shapes which can be completely enclosed and visible within a cylinder or sphere, without projecting or hollow parts.

3. **Spherical Mapping:** Cylindrical and Spherical mapping map UVs by projecting based on a cylindrical or spherical shape wrapped around the mesh. These projections are best for shapes which can be completely enclosed and visible within a cylinder or sphere, without projecting or hollow parts.

It is good to know what each does so you can apply the proper map to your model. For the first example I will use all planar maps.

I will start with the doors. First select the entire object you want to texture.(Fig. 2.) Then go to *Edit Polygons* > *Texture* > *Planar Mapping* □. Next, choose which axis you want to project on (X, Y, or Z). Or, if you object is not lined up with any of the three axis's, then you could just choose fit to best plane and Maya will adjust the map to the best of its capabilities to line up with the positioning of the object. (Fig. 3 - 4)

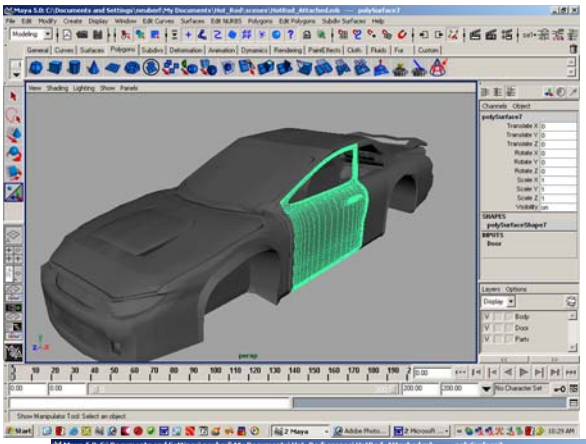


Fig. 2.

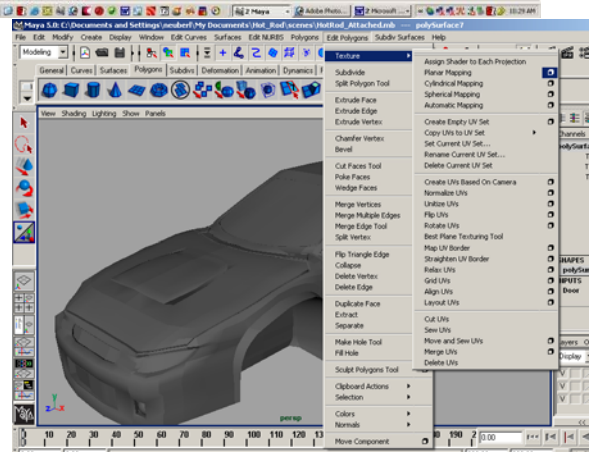


Fig. 3.

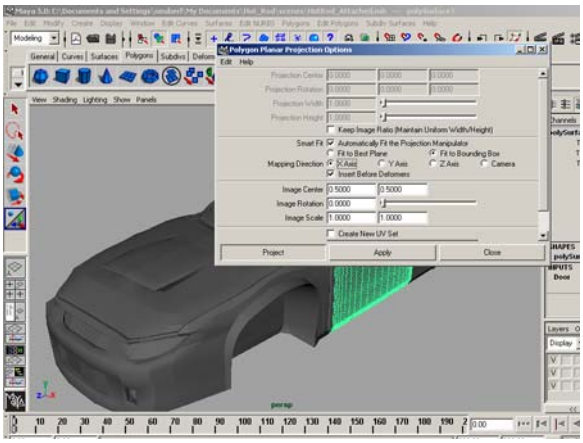


Fig. 4

Now you will see a map around your object (Fig. 5). Now to ensure everything is uniform, assign a material with a checker map to the planar map on your object (Fig. 6).

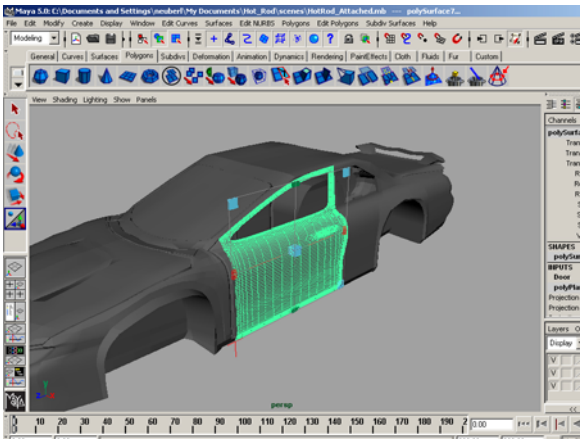


Fig. 5

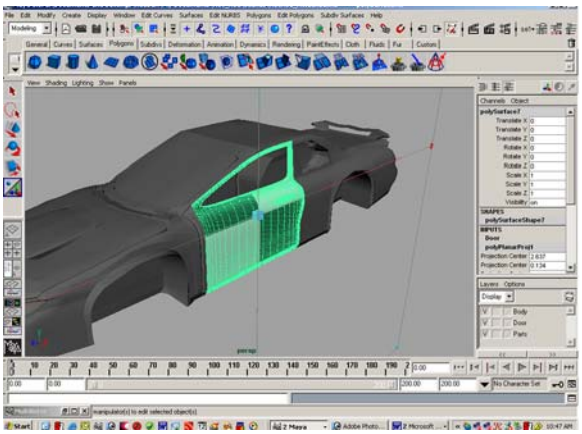


Fig. 6

We will use this checker map to keep all textures equal and ensure they line up and are all in uniform to one another. In order to do this we want to be sure we have a lot of boxes to work with in the checker map and be sure they are all square. We do not want any stretching. SO, first we will increase the size of the map and keep it in the shape of a box. To do this, make sure the map is selected, then in the channel box, scroll down to were it says projection width and height. Highlight both and change the size to something like 30 or 35 (Fig. 7).

Fig. 7

You can now see that the map increases in size greatly. We are only doing this because with every other map we use, we want to do the same. This way all maps are equal, thus projecting equal textures. So now we will open the attribute editor for the checker texture, go to the place2Dtexture tab, and increase to U and V repeat of it (Fig. 8). This will give us our squares again. You can also see that the texture is a little blurry. If you want to fix this to see the results better, open the attributes for the material, scroll down to render stats, and increase the hardware texturing (Fig. 9).

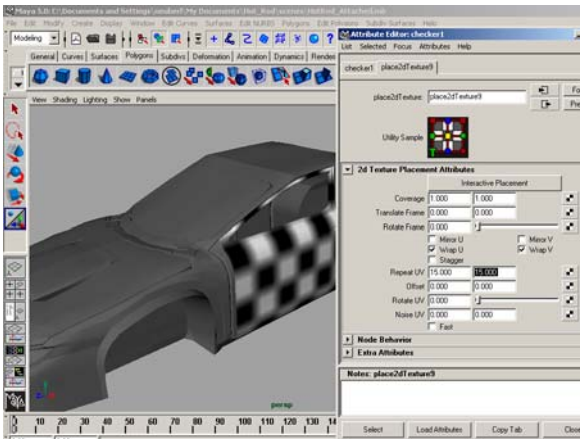


Fig. 8.

Fig. 9

After increasing the hardware texturing you can now see the texture more accurately (Fig. 10).

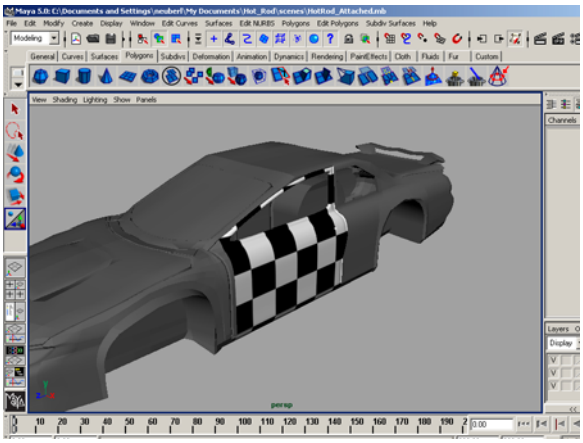


Fig. 10

Now I will repeat these steps for the top and sides of my car. Since the car is one full polygon I can use a cylindrical map or simply continue with planar maps. This time I will select all of the faces I want to project a map onto (Fig. 11).

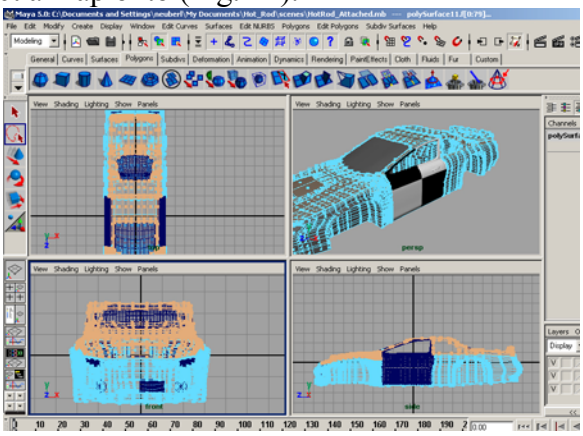


Fig. 11

Next, go to *Edit Polygons* > *Texture* > *Planar Map* □ (Fig. 12). Then choose the axis you want and project the map (Fig. 13).

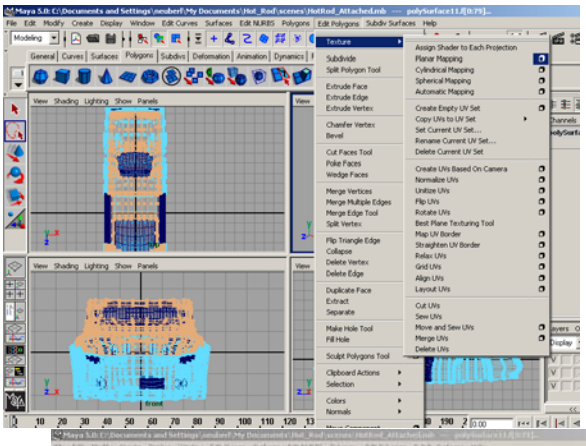


Fig. 12

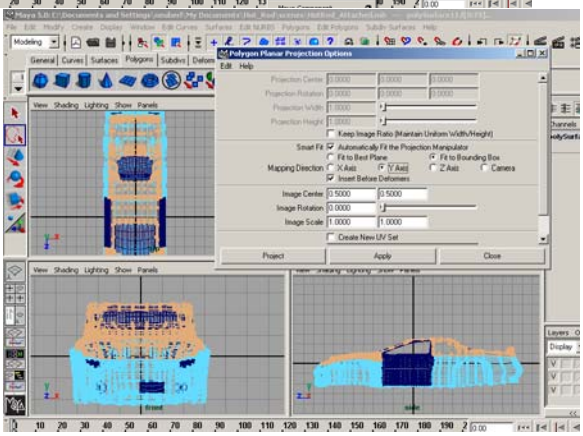
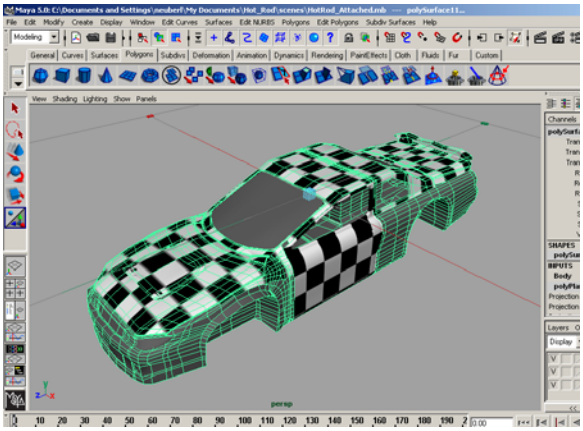


Fig. 13

Then, just like before, adjust the height and width of the projection map to match the previous one (Fig. 14). Now assign the same material to it and everything should line up equally on both parts (Fig. 15).



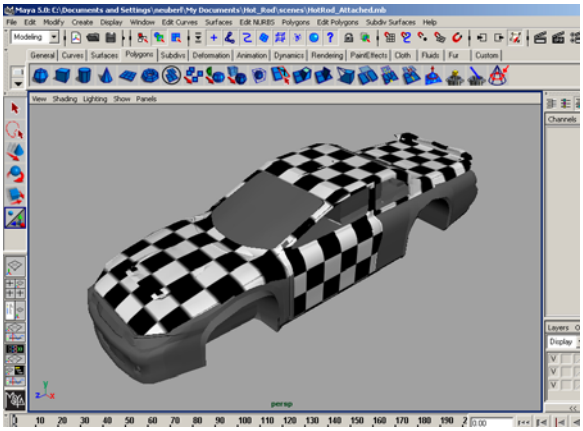


Fig. 14 Fig. 15

Now just continue until we have the entire car set with maps. Figure 16 below represents the final results.

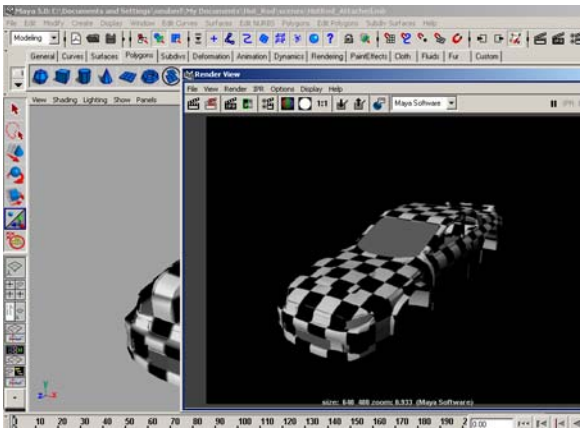
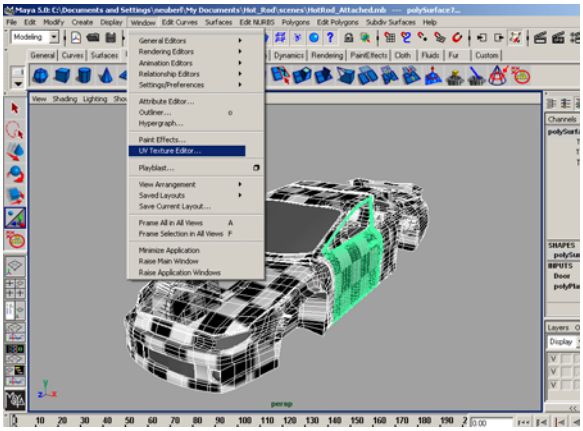


Fig. 16

Now that we have all of our maps we can get ready to paint them for textures. Select all of your objects and go to *window* > *UV editor* (Fig. 17.). There we will be able to see each of our maps and we can then get ready to adjust their positions (Fig. 18).



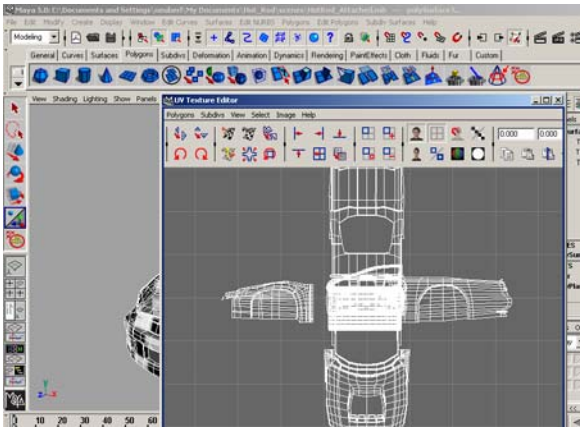


Fig. 17.

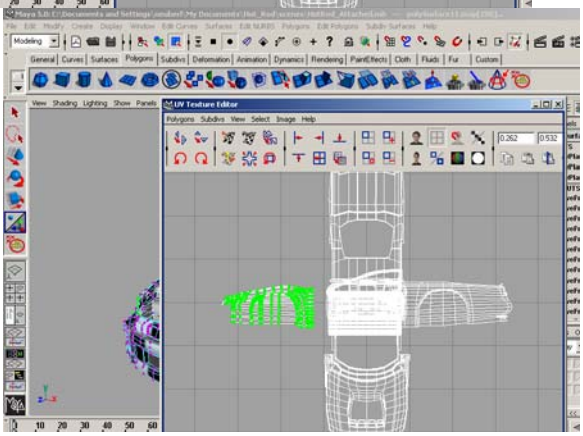


Fig. 18.

Next we need to rearrange and organize our maps in the UV texture editor. To do this, right click on any map and choose UV. Select a group of UV's on the map (Fig. 19) and go to *Select* > *Select Shell* (Fig. 20) which will select the rest of that object.

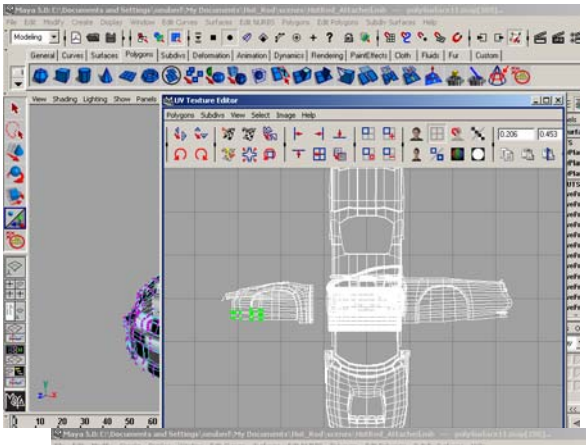


Fig. 19

Fig. 20

Now we can move and rotate this to better view all of the maps. Continue doing this for each map until they are all arranged accordingly (Fig. 21).

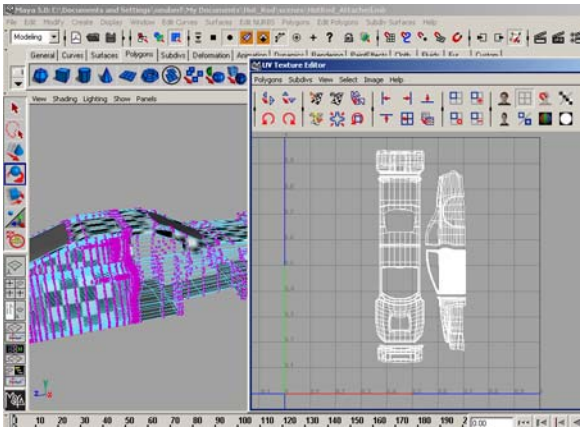


Fig. 21

Now we are almost ready to begin painting our textures. There are two ways we can continue. One is to simply use the maps the way they are, export them into Photoshop or some paint program, paint our textures and bring them into Maya, or we could sew everything into one map or even into two larger ones. For this example I will sew a few of the pieces together so you can see how this is done. Remember, if you do not want to sew them together, then you can skip ahead to Fig. .

In order to sew pieces together your maps must be lined up somewhat like figure 21 above. Once lined up, right click on a map and choose edge. Select and edge and you will see a corresponding edge on the other map highlight. These are two edges that can be sewn together. (Fig. 22). Once you have two edges lined up and selected, go to *Polygons* > *Move and Sew* (Fig. 23).

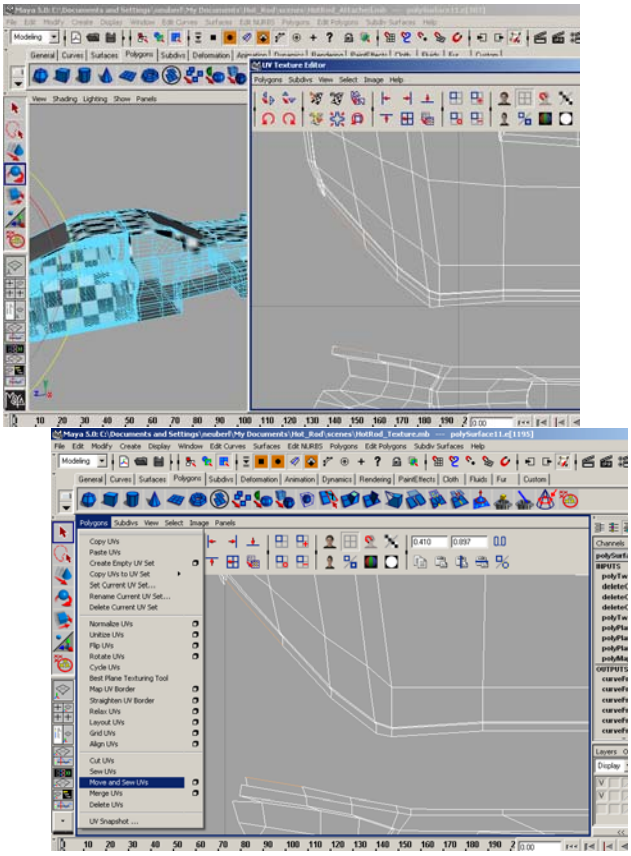


Fig. 22 Fig. 23

The resulting outcome is the two edges being sewn together and the piece moving (Fig. 24). Now all we need to do is repeat this for each of the edges on that piece, or just select all of them and choose *Polygons* > *Move and Sew*.

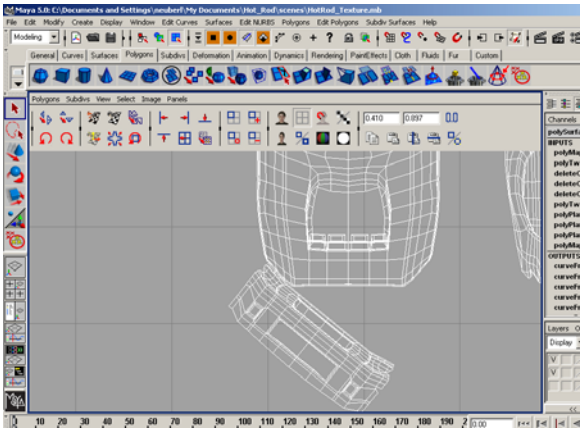


Fig. 24

Once all of the edges are sewn the two pieces should be attached as one (Fig. 25)

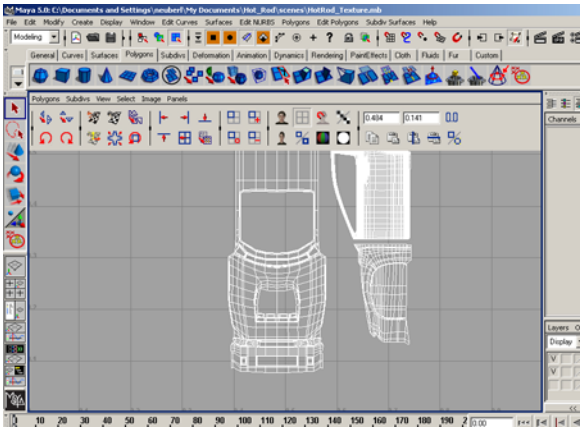


Fig. 25

Now I am just going to repeat the same steps for the tail end of the car to attach that as well. The two sides and doors I am going to leave separate. Mainly because it looks like there is only one piece, but if I select one UV, then select the shell and move it you can see there are two pieces for the two sides. (Fig. 26) If I wanted to, I could separate everything and sew it together to make one giant map (Fig. 27), but I will leave it as is to demonstrate both options together.

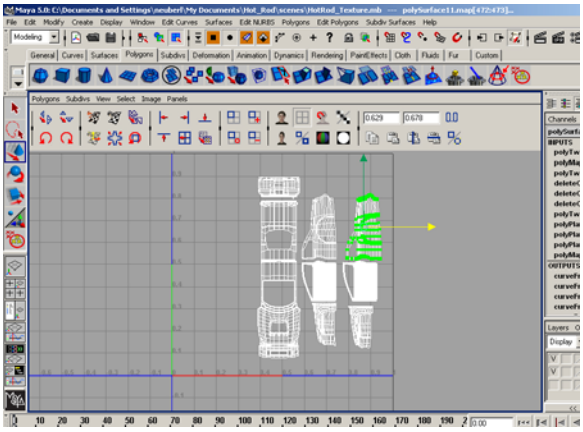


Fig. 26

Fig. 27

Now I am ready to export into Photoshop to start painting. In the UV texture editor window, go to *Polygons* > *UV Snapshot* (Fig. 28). Then browse to a location where you want to save it (preferably in your project folder), Name it, and make the size 1024 X 1024. Then hit OK (Fig. 29).

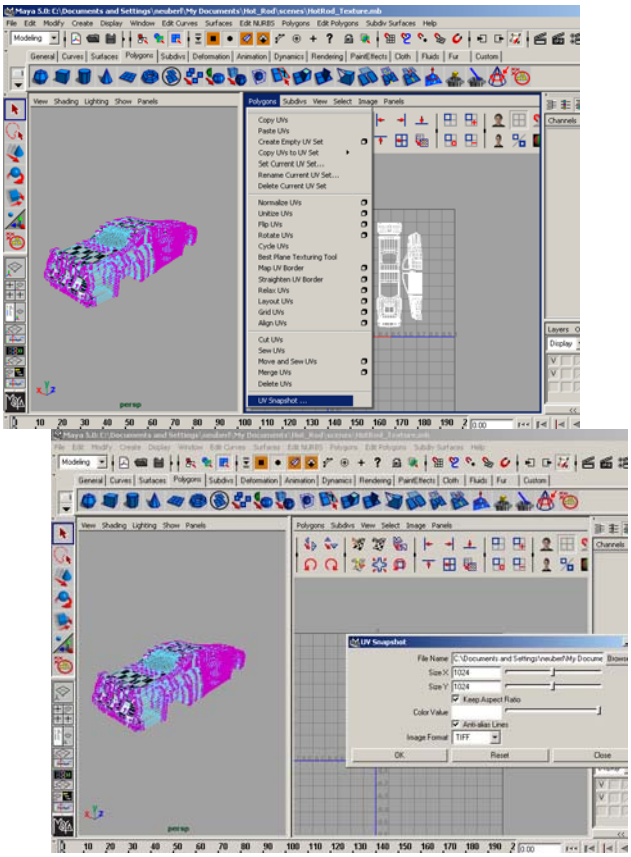


Fig. 28

Fig. 29

Now we can open Photoshop (or a comparable paint program) and get ready to paint our textures. Once in Photoshop, open the file we exported (Fig. 30). Then create a new layer to paint on and make the original layer with the texture map on it semi transparent (Fig. 31).

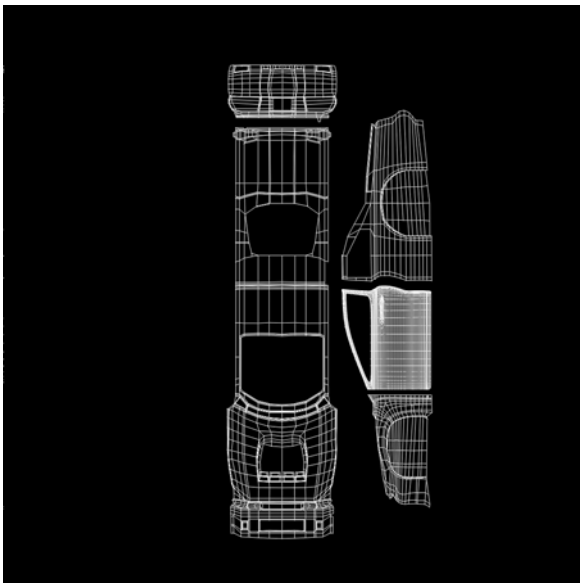


Fig. 30

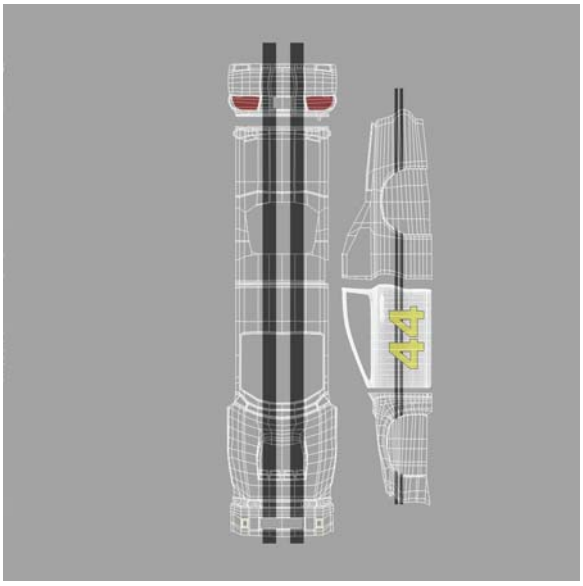


Fig. 31

Now we can start painting. It does not matter if you stay in the lines or not. In this case I will fill the entire background white because that is what color I want my car to be. Then I will simply start painting in the details where I want them (Fig. 32). After you are happy with it, delete the top layer (the texture map you brought in) and save the file (Fig. 33).

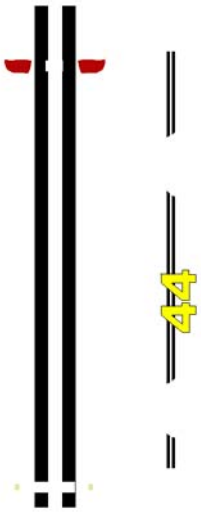


Fig. 32 Fig. 33

Fig. 32 shows the texture painted on top if the original map we brought in.

Fig. 33 Shows the painted textures after deleting the original texture map layer.

Now go into Maya and either using the hypeshade or Multilister, create a file texture and bring in the texture you just created (Fig. 34). Replace the checker texture with the new one we just create on the material and you will see your new textures (Fig. 35).

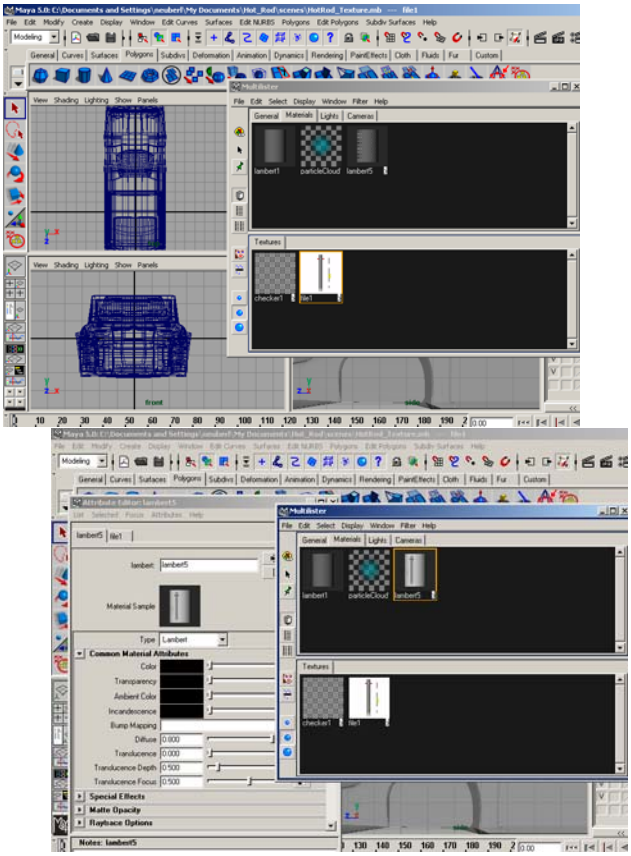


Fig. 34 Fig. 35

Fig. 36 below shows the car with the new texture map on it.

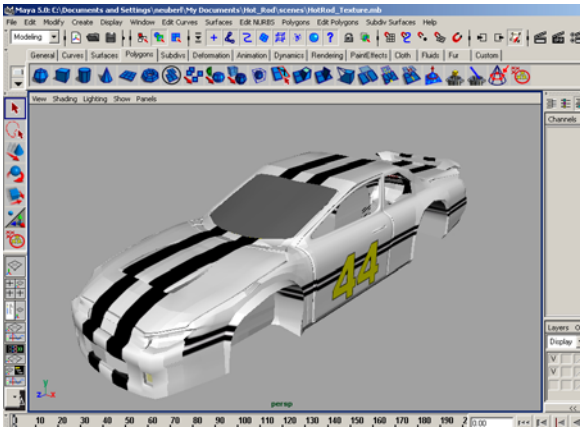


Fig. 36

Two last things before we finish up. You can see that the insides of the objects show the textures as well. We only need them to be visible on the outside. To correct this, simply select the object, go to it's attribute editor, g to render stats, and uncheck double sided (Fig. 37). Now only textures will be visible on the outside of the car (Fig. 38).

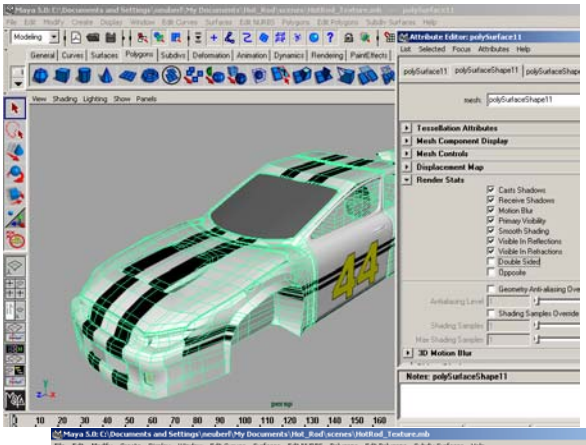


Fig. 37

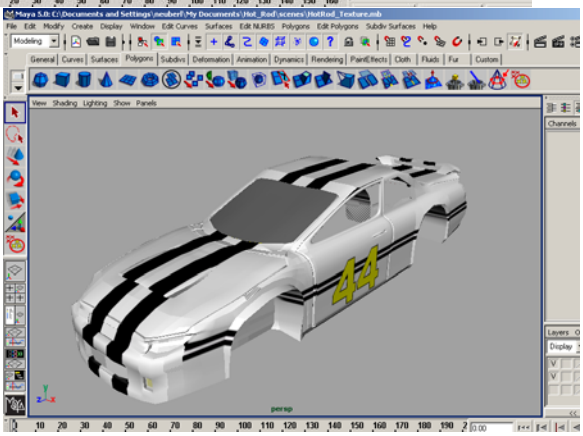


Fig. 38

You can see by comparing Fig. 36 and 38, the textures in Fig. 38 are no longer visible on the inside of the car.

Now we can simply smooth the car by going to polygons > smooth and render the final

results.

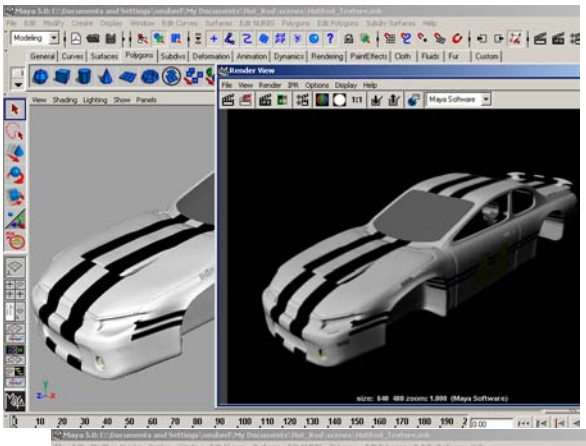


Fig. 39

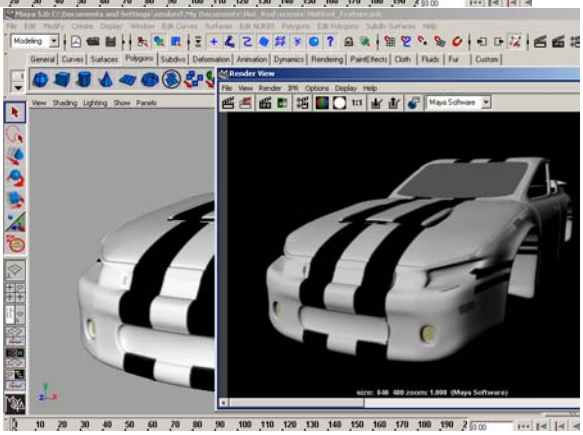


Fig. 40

That's it.
As always, if you have any questions, just ask.
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607-587-4694