An Approach to Content Creation for Trainz

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Part 9

Simple Skinning

(Updates and sample files available from http://www.44090digitalmodels.co.uk)

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So What's 'Skinning'?

‚Skinning' is the process of ‚painting' a 3D Model and seems to case people more problems than actually creating the model. The following discussion is about a simple method of using block textures (patches of solid colours) to texture a loco. This technique well suited for steam locos in a clean condition but not for weathered locos which need a more complicated method. Despite this I usually start by using block colours and then create a full skin later.

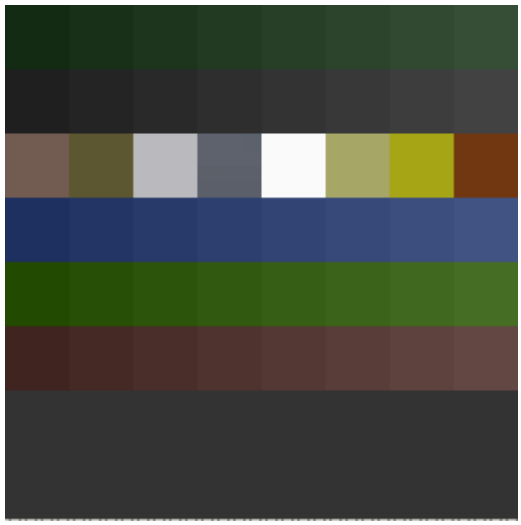
Note that this document is not about 'reskinning' which is something quite different.

Creating the Textures and Materials

The first thing we need to do is create a material in GMax or Max to texture the model with. A material is not the same thing as a texture – a texture is simply a bitmap image, a material is a texture plus extra parameters such as glossiness, opacity etc.

For this tutorial I'm going to use a technique I call 'microskinning' as this is probably the easiest way to get started. In fact even if the final skin will be properly mapped these days I tend to start with a microtexture anyway as all parts of the model have to be mapped and have a texture applied to export it into TRS. The more complicated 'ChilliSkinning' method just isn't needed for every single part of a model.

A 'microtexture' consists of a very small bitmap (in this case 32x32 pixels with 4x4 blocks of solid colours). Here it is actual size->  as it's so small here it is again scaled up 800%.



This texture includes all the colours needed for black, BR green, BR blue and LNER green locos. The third row from the top has various metal colours such as brass, copper, steel and also textures for windows and other parts.

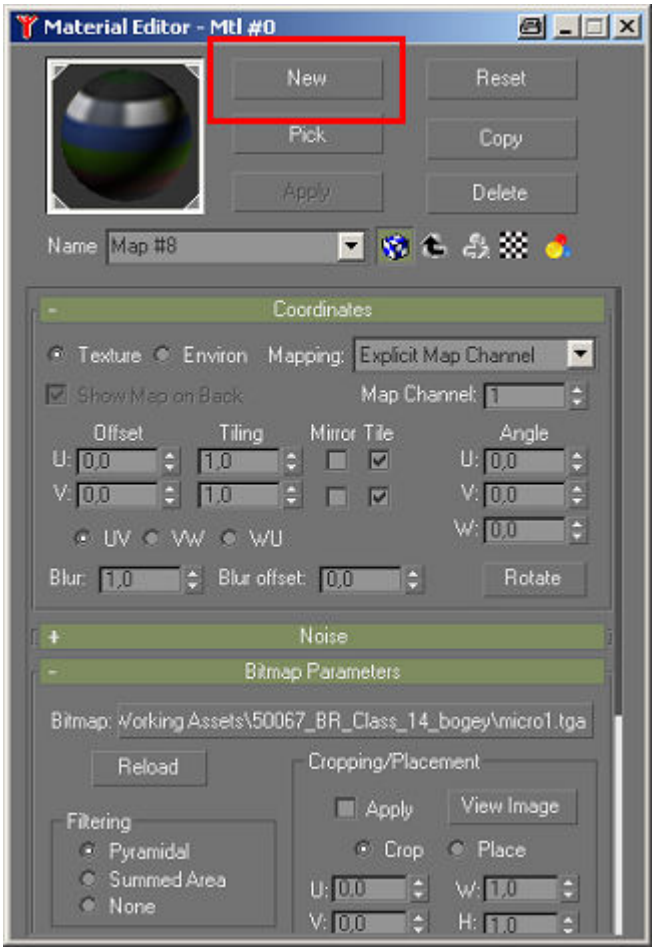
The thinking behind 'microtextures' is that if the model is going to be textured with block colours then the blocks should be as small as possible and combined into only one texture file. **Each separate texture file has roughly the same impact on performance as 200 polys (according to information from Auran).**

A limitation is that complicated liveries and weathering are not possible, but for some types of models (notably simple ones that are clean!) the texturing ca be done very quickly and easily.

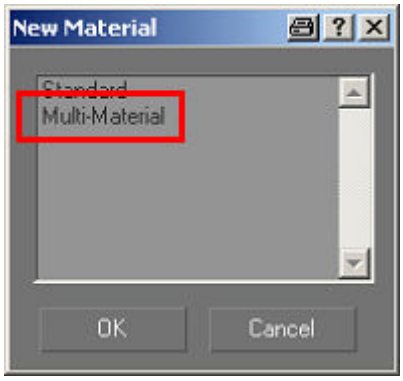
This 'microtexture' is only 5K in size and includes most of the colours needed for British prototypes. 16 colour blocks are not even used and can be coloured as required for other prototypes. Also note that each of the main colours is present in different shades – this helps to bring out the detail compared to using just one shade.

This tutorial assumes the use of GMax 1.2 – there's no reason not to upgrade to v1.2 and in v1.1 the material editor was quite different. Max5 is different again but the principles are the same.

To create the material open the material editor and choose ‘New’.

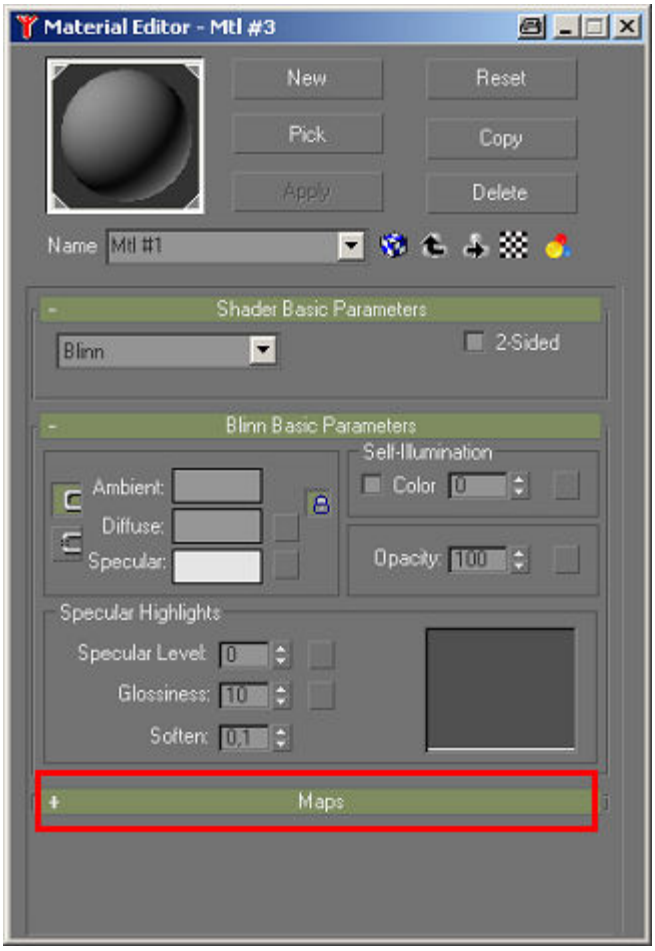


Next, choose ‘Multi-Material’.

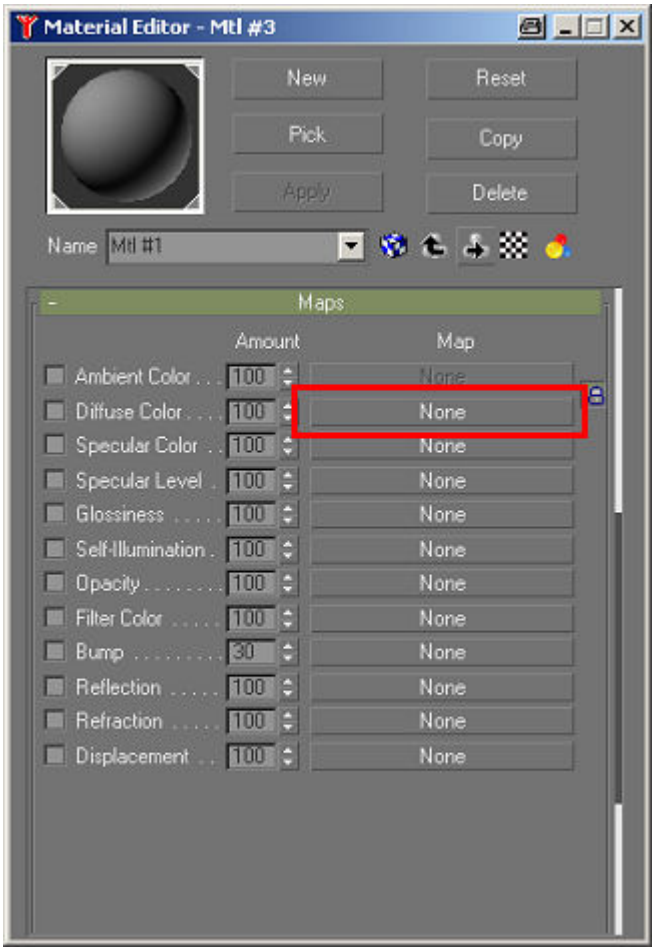


The material editor for the multi-material opens. Now we have to assign a texture to each of the sub-materials so click on ‘’Mtl#1 (Standard)’.

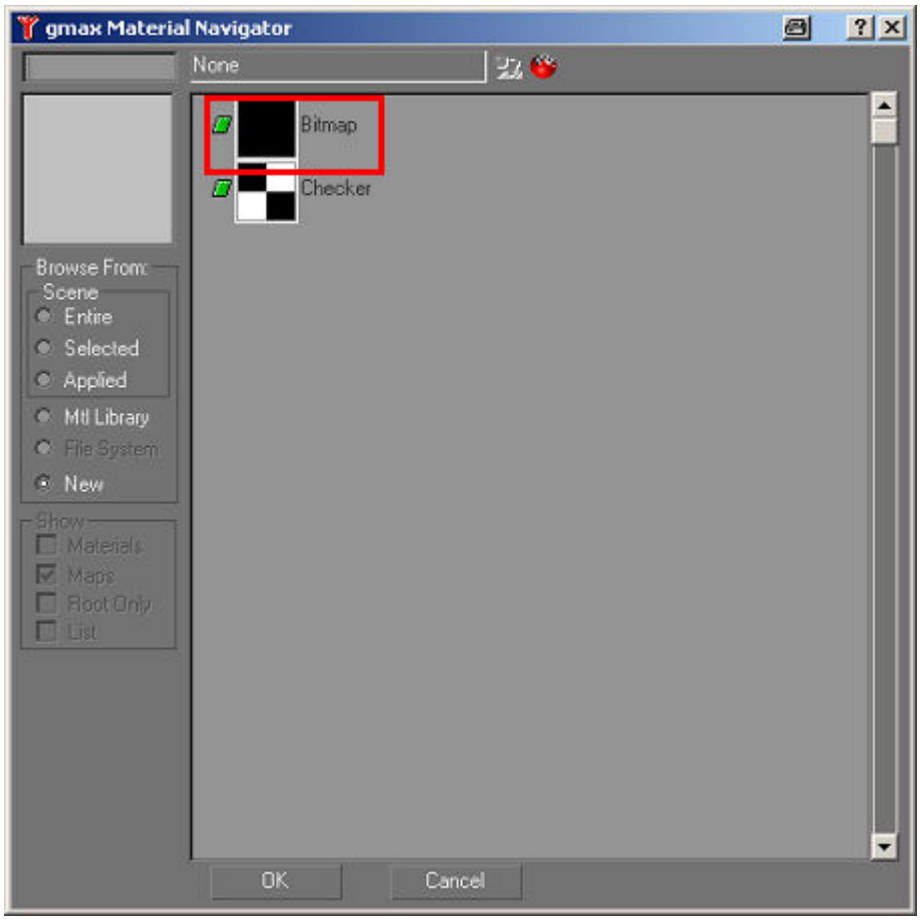
Now click on the ‘Maps’ bar



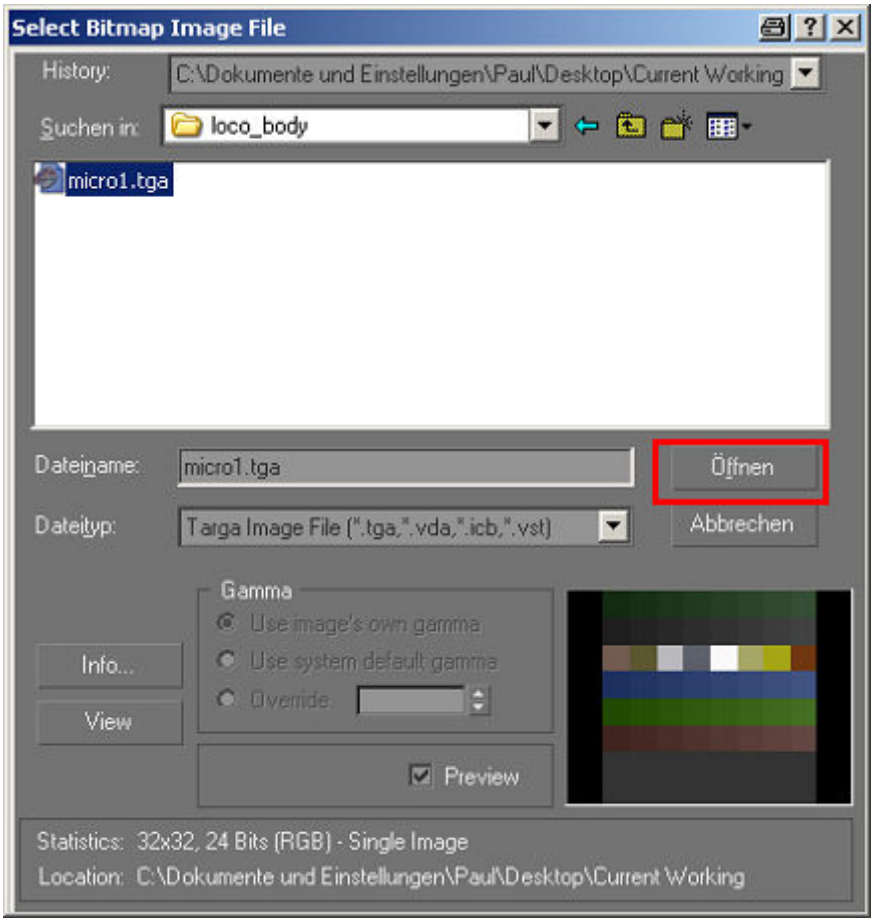
Now click on the ‘None’ icon next to ‘Diffuse Color’



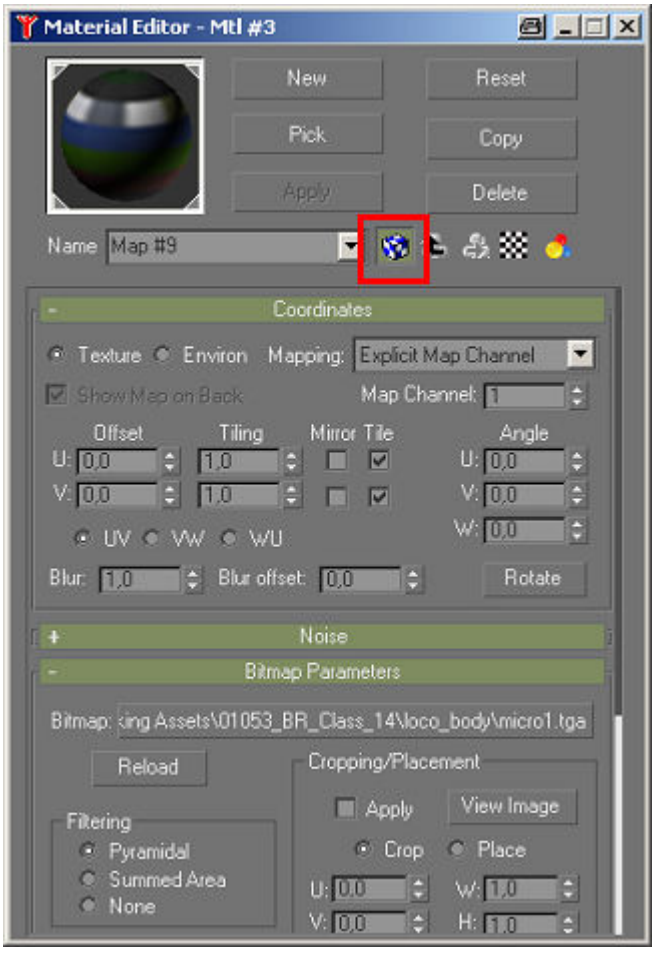
And finally double click on the ‘Bitmap’ field



Navigate to the location where the bitmap is to be found and choose ‚Open' (as I'm using a German version of Windows it's shown as 'Öffnen' here)



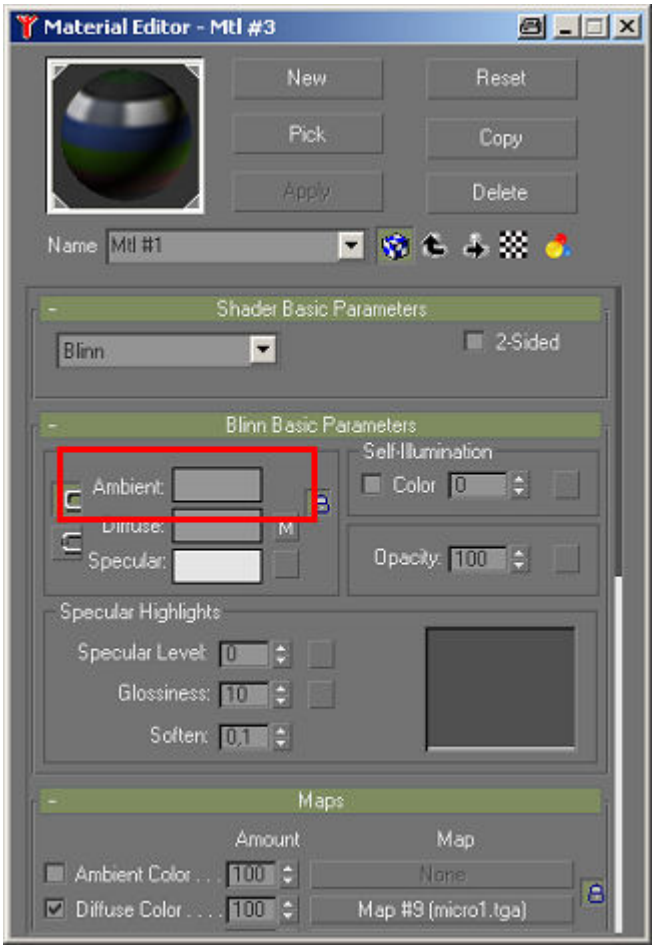
Most important – select the little blue and white chequered icon to tell GMax/Max to display the texture in the Viewports. If you forget to do this you won't see the texture (the model will be grey).



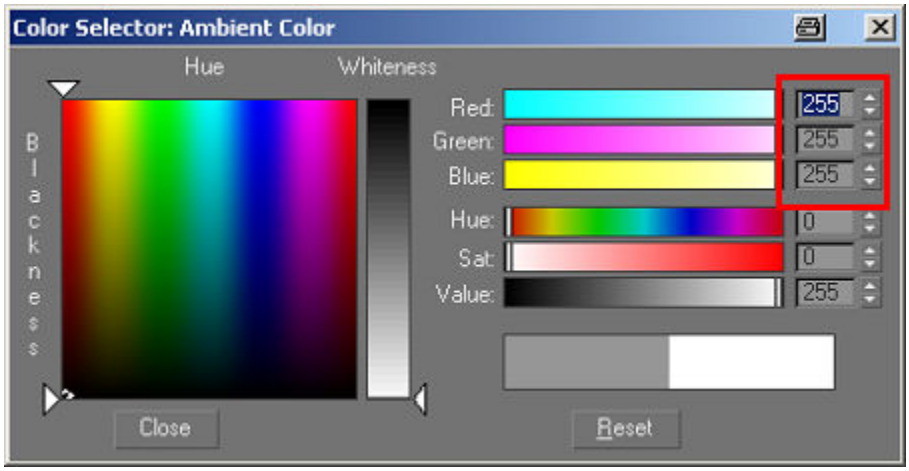
Go back to the properties window for the first sub-material and scroll up to see the settings.

I'm going to assume that GMax is set up as described in the first tutorial for specular highlighting as this helps to bring out the detail in the model by adding a certain amount of 'shine' to it.

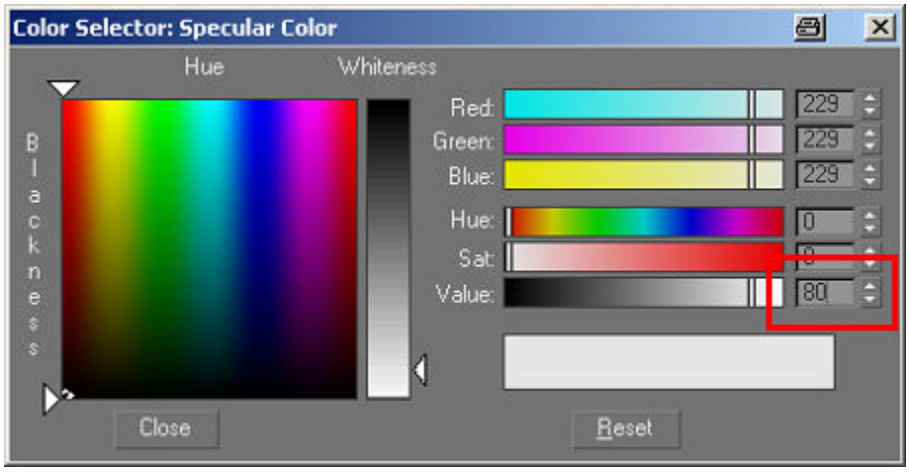
Click on the 'Ambient' field.



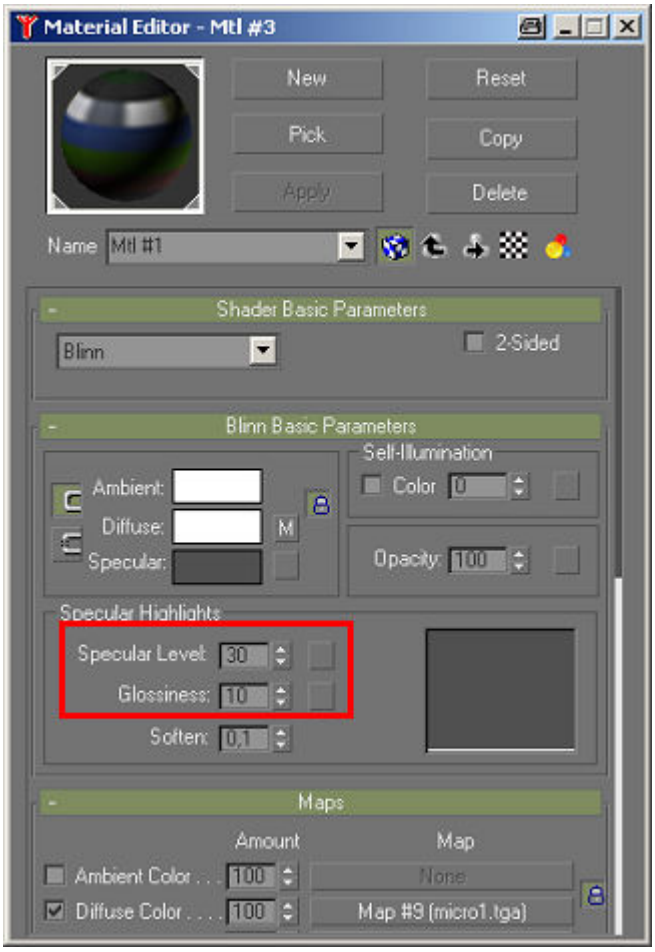
Set the ambient colour to 255,255,255 **(very important when using specular materials, other values colour the specular highlights in a way that is not always desirable).**



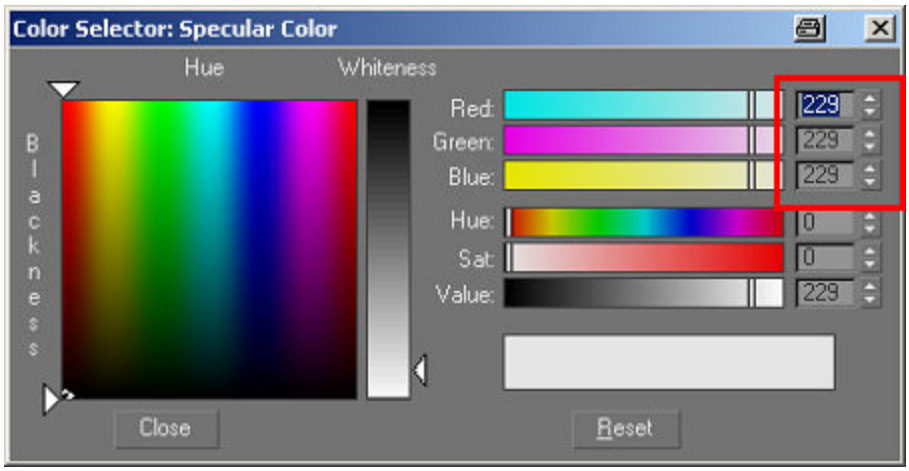
Choose ‘Close’ and repeat for the ‘Specular’ field but set the colour to about 80. My first specular models had this setting too high which made the models appear too bright and shiny.



Set the ‘Specular level’ to 30 and the ‘Glossiness’ to 10. This gives a nice dull shine to the material.

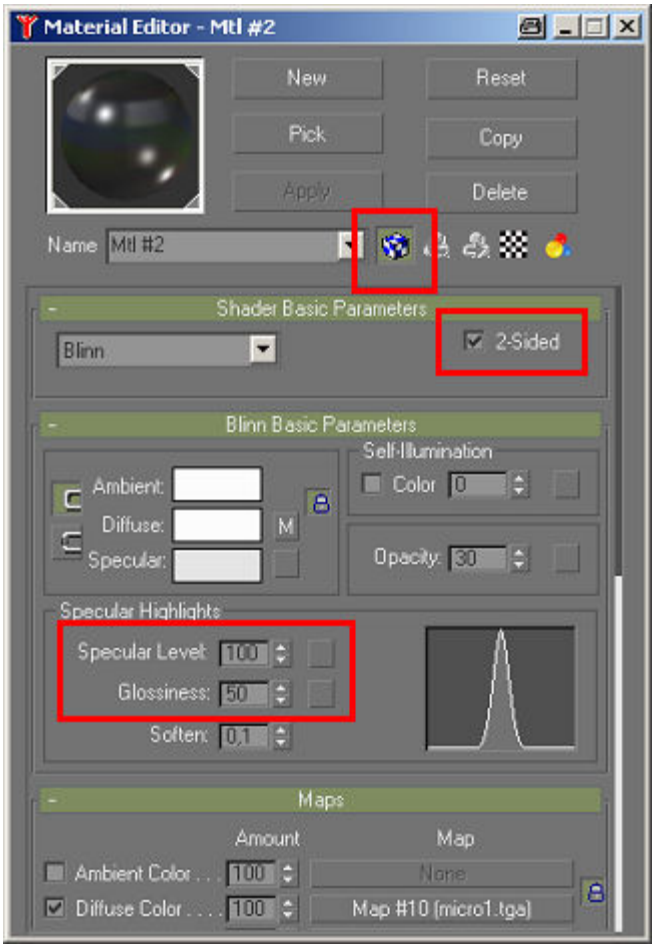


We need to repeat the steps for the second sub-material now – this will be used to texturing the glass areas of the model. The texture file is the same, only the material settings are different.



Set the specular colour to 229 instead of 80…

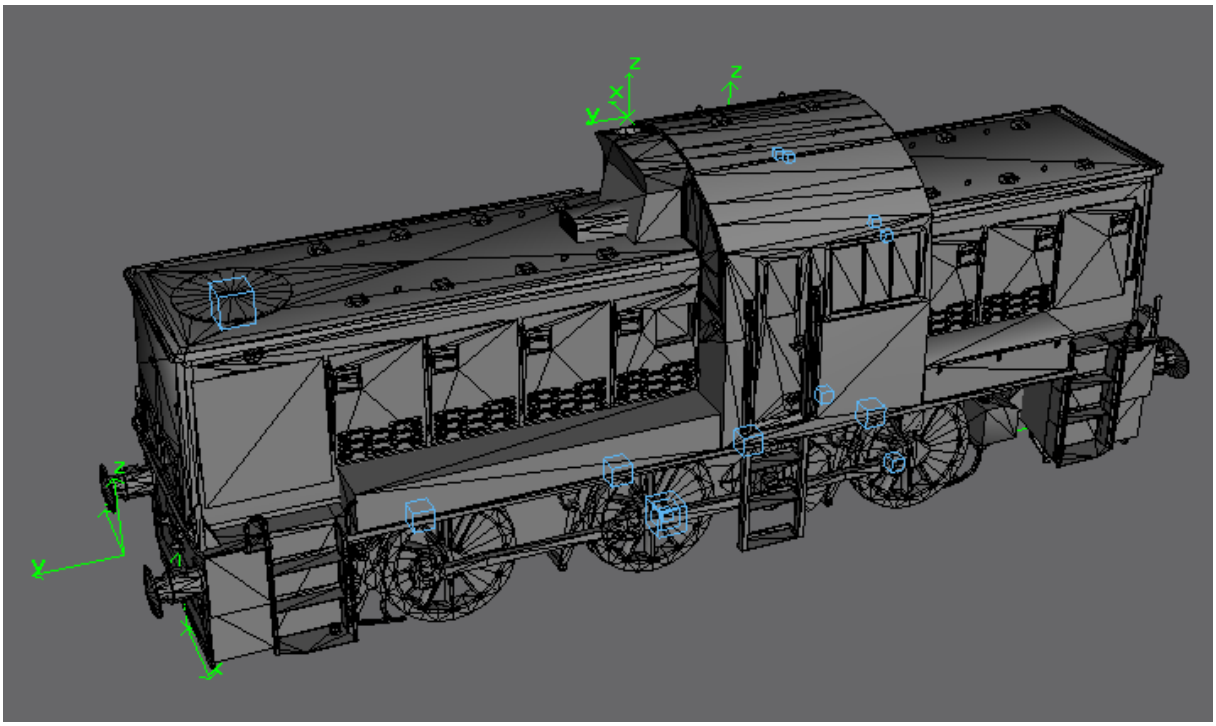
Set the ‘Specular level’ to 100, ‘Glossiness’ to 50 and ‘Opacity’ to 30. Also select ‘2-Sided’.



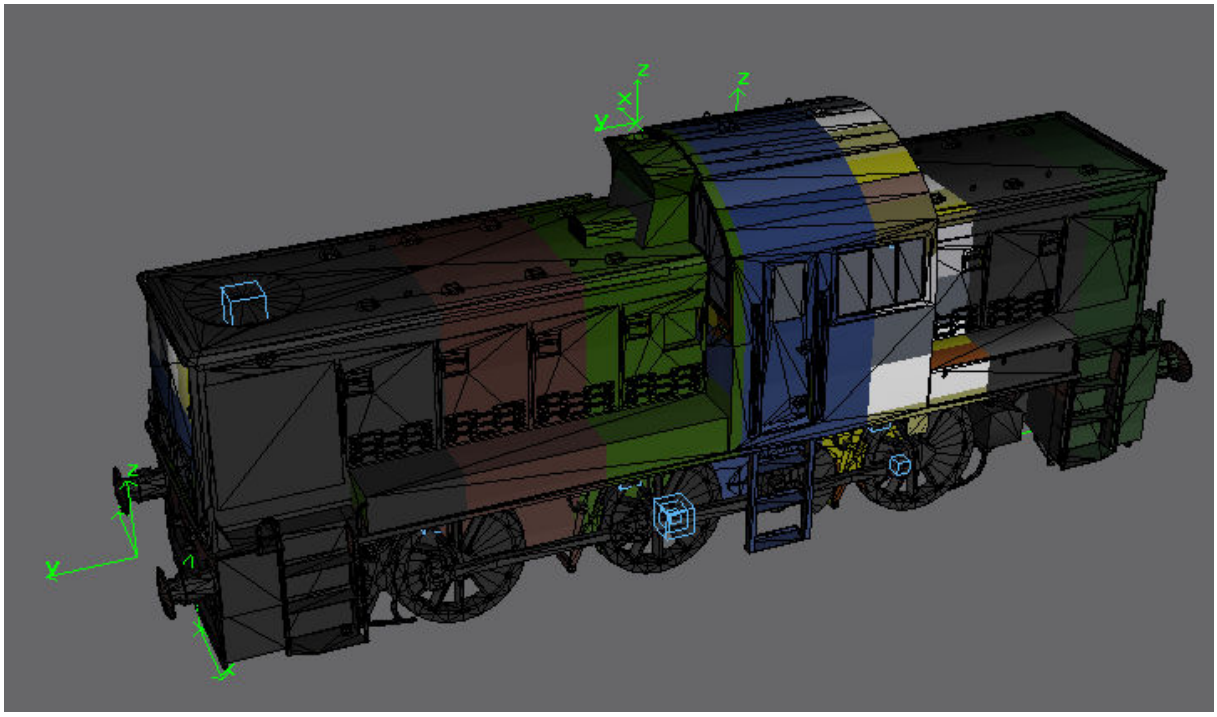
That all probably sounded more complicated than it really is – I've described the process of creating materials in considerable detail as it seems to cause people a lot of problems.

Applying Materials

The example model I'll be skinning is a BR Class 14 diesel (a rather nice model by Pikkabird by the way) – here it is without textures.

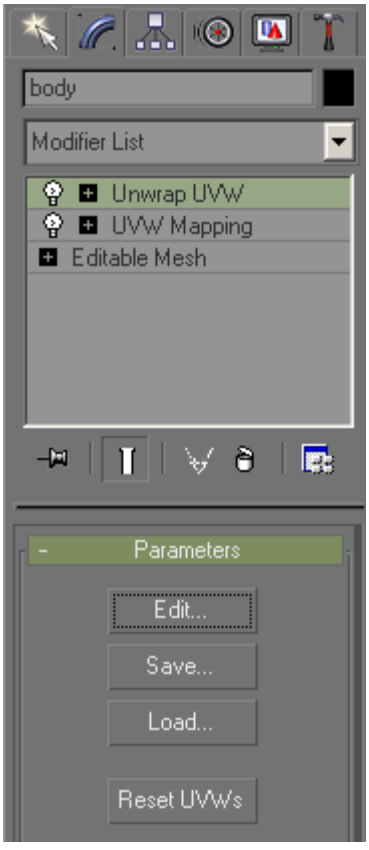


Open the material editor and simply drag the multi-material onto each of the meshes that make up the model.

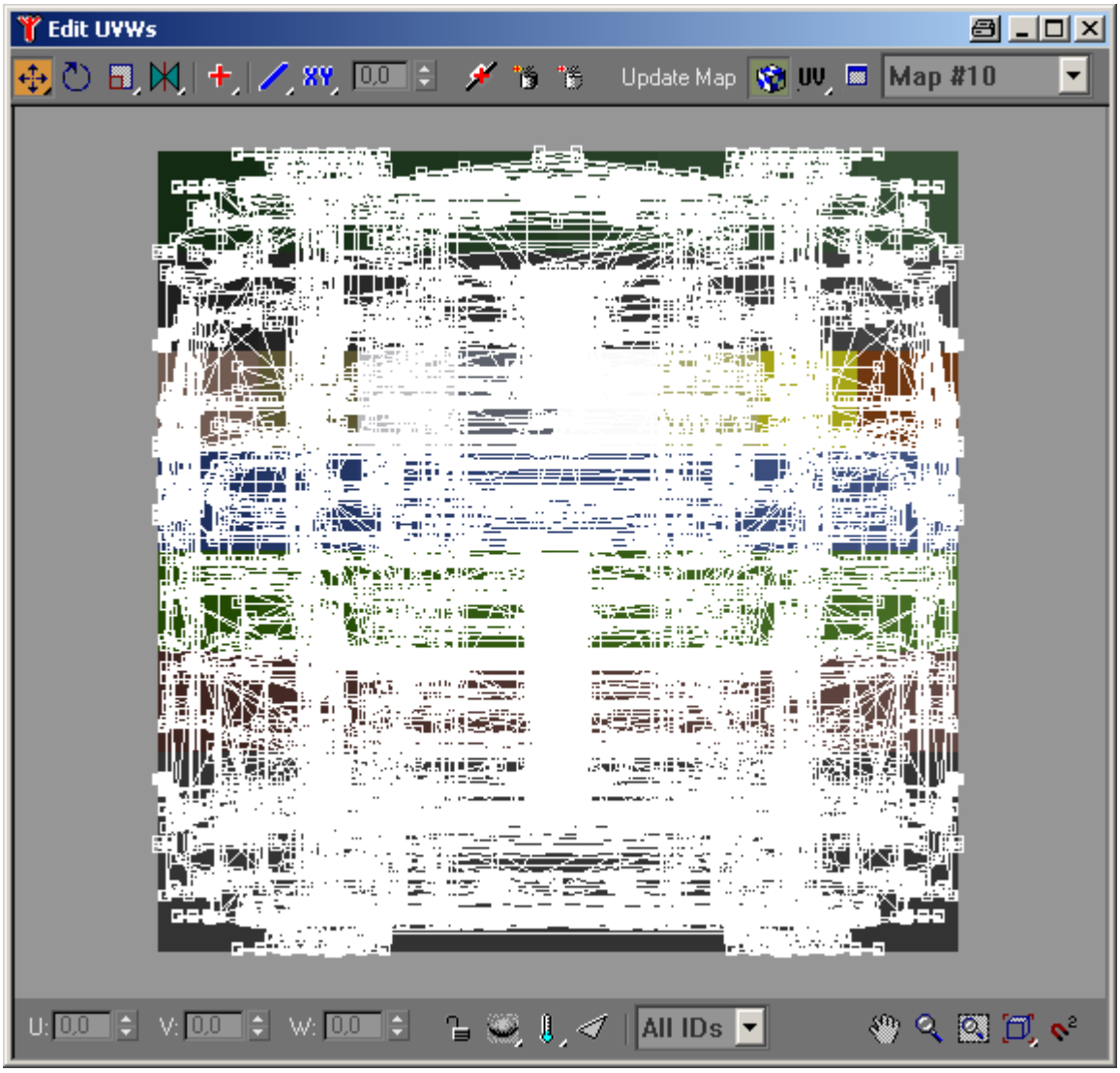


Apply a ‘UVW Mapping’ modifier to the stack and select ‘Box’

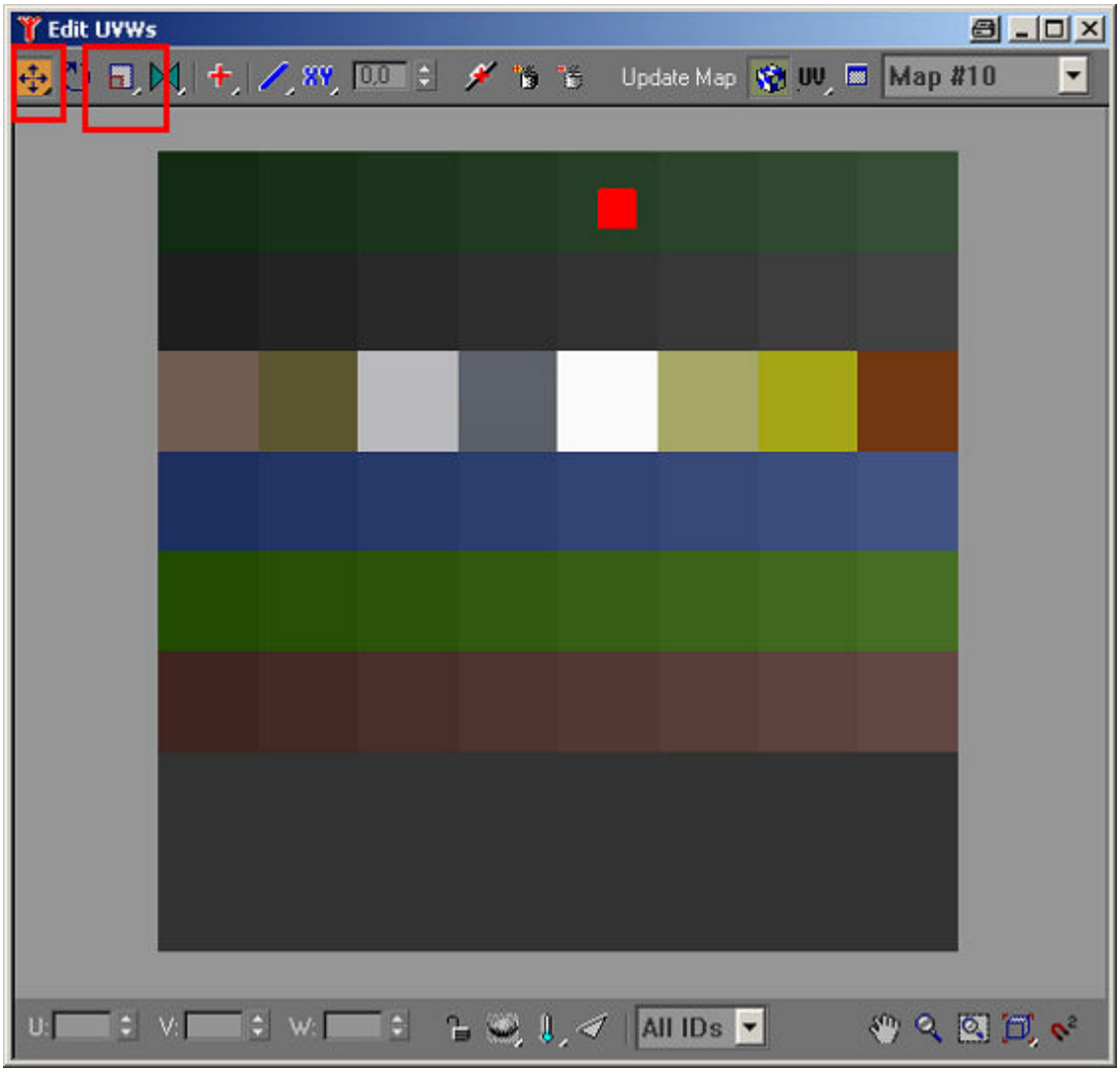
The next step is to change the mapping so that each part gets the desired colour applied to it, so now add an ‘Unwrap UVW’ modifier and choose ‘Edit’



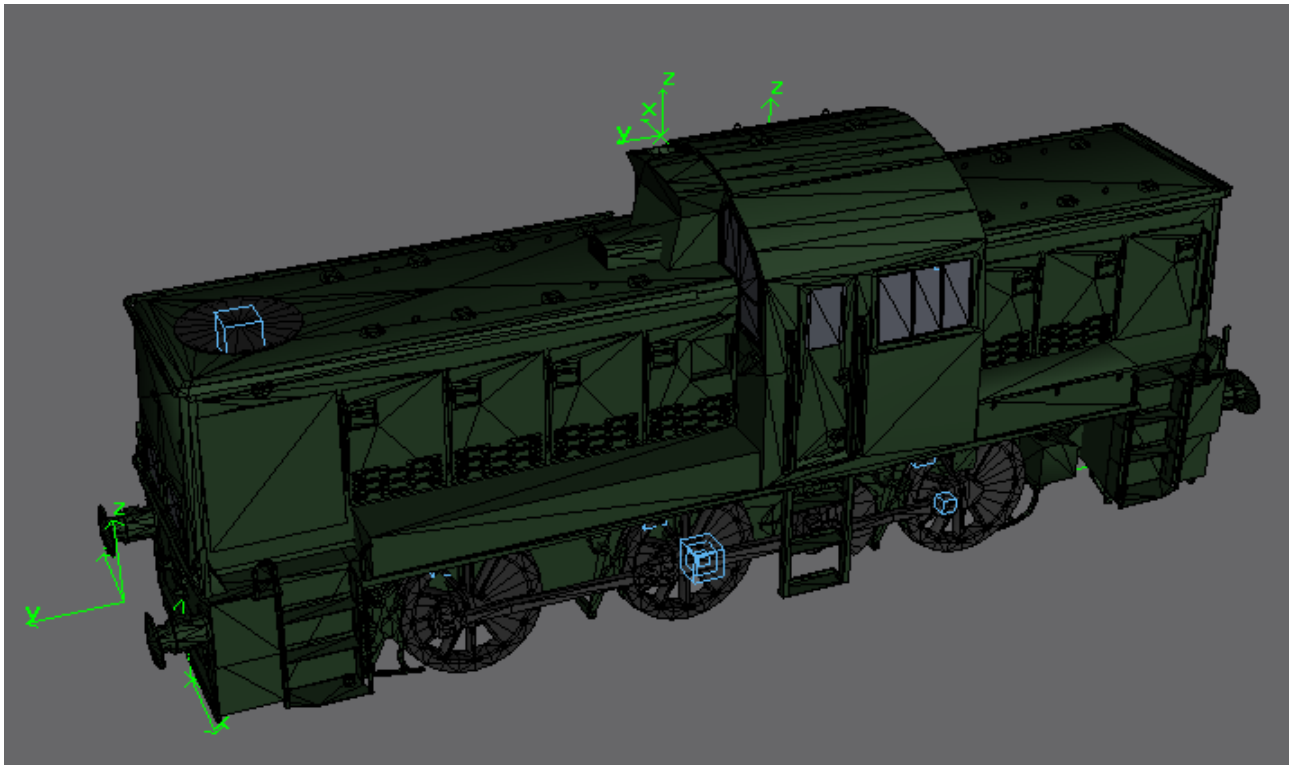
The ‘Edit UVWs’ window opens



Choose ‘Select and Scale’ and scale and move the mapping down so that it fits in the desired colour block.



The result looks like this:

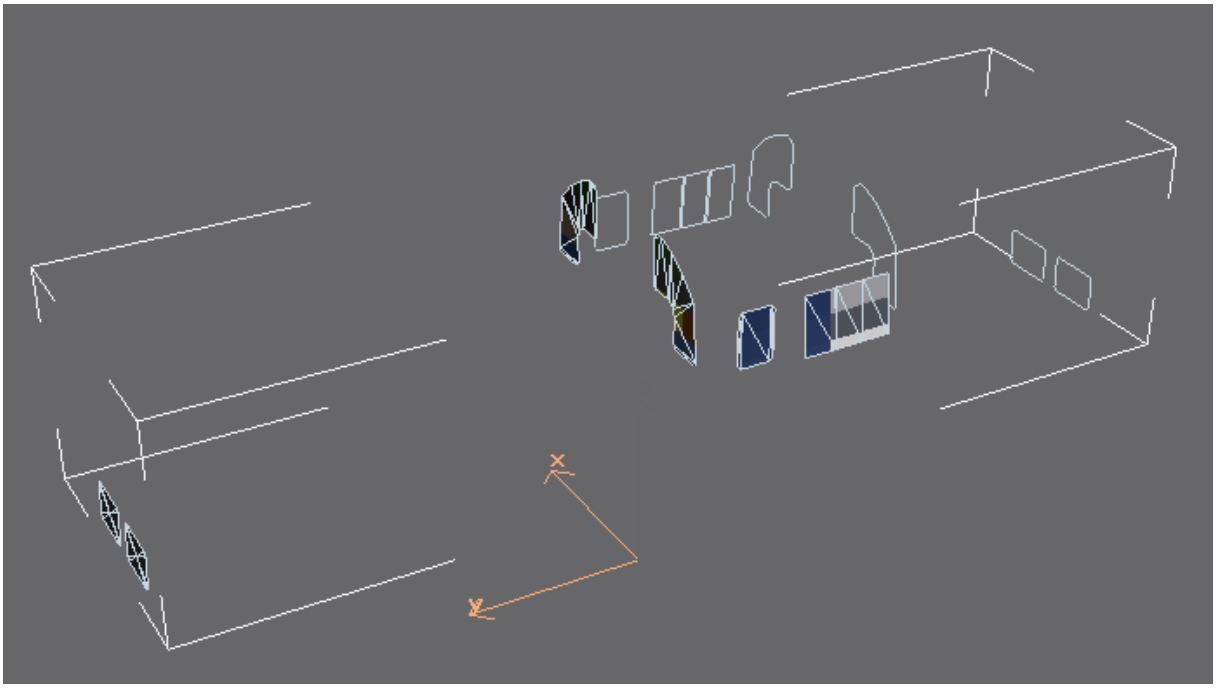


Using Different Sub-materials

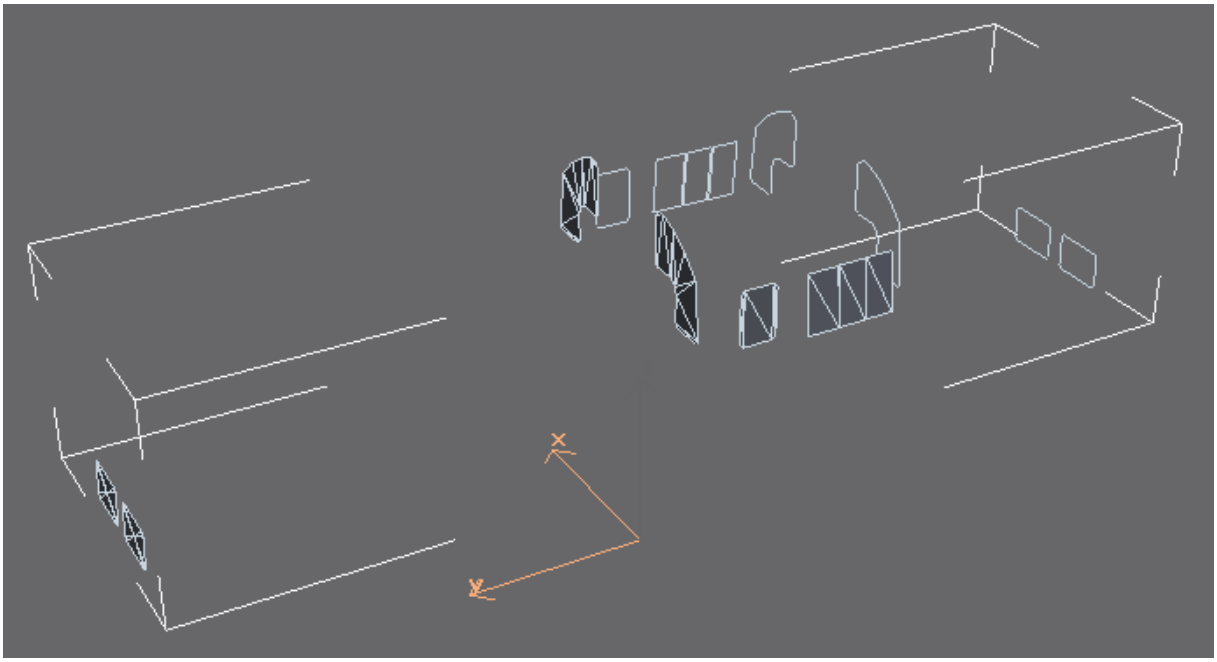
That was pretty easy, but there are a couple of other things to note. Firstly as we have a multi-material we have to be careful which of the sub-materials has been applied. If you remember material 1 was the solid colour, material 2 was for the glass. GMax will occasionally assign other sub-materials to the meshes such as 3, 4 etc which will result in the wrong colours being displayed in GMax and white areas in TRS.

To fix this we need to select all the polys in the selected mesh and assign the desired sub-material to them.

To illustrate this I'll texture the glass areas with the second (transparent) sub-material. This loco has the glass mesh separate from the bodywork so I'll select it and hide the rest.

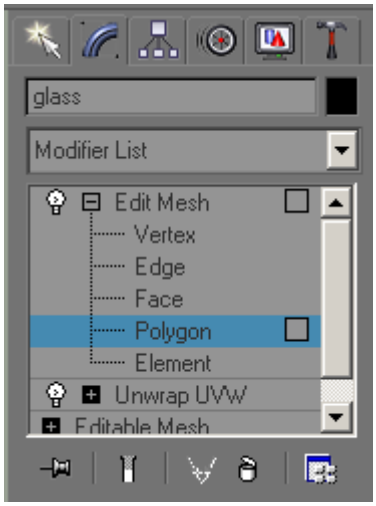


I’ve applied the multi-material to the glass mesh and as you can see the mapping is wrong and the wrong sub-material is applied. After remapping the UVWs to the correct colour patch it looks like this:

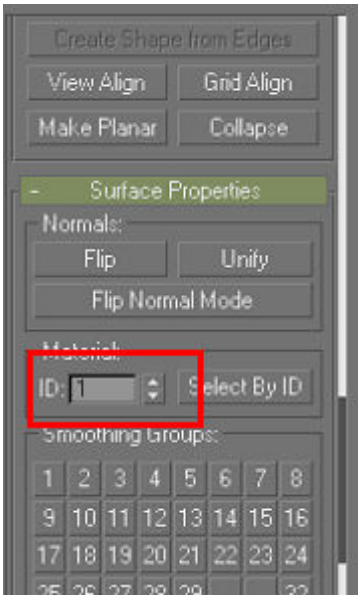


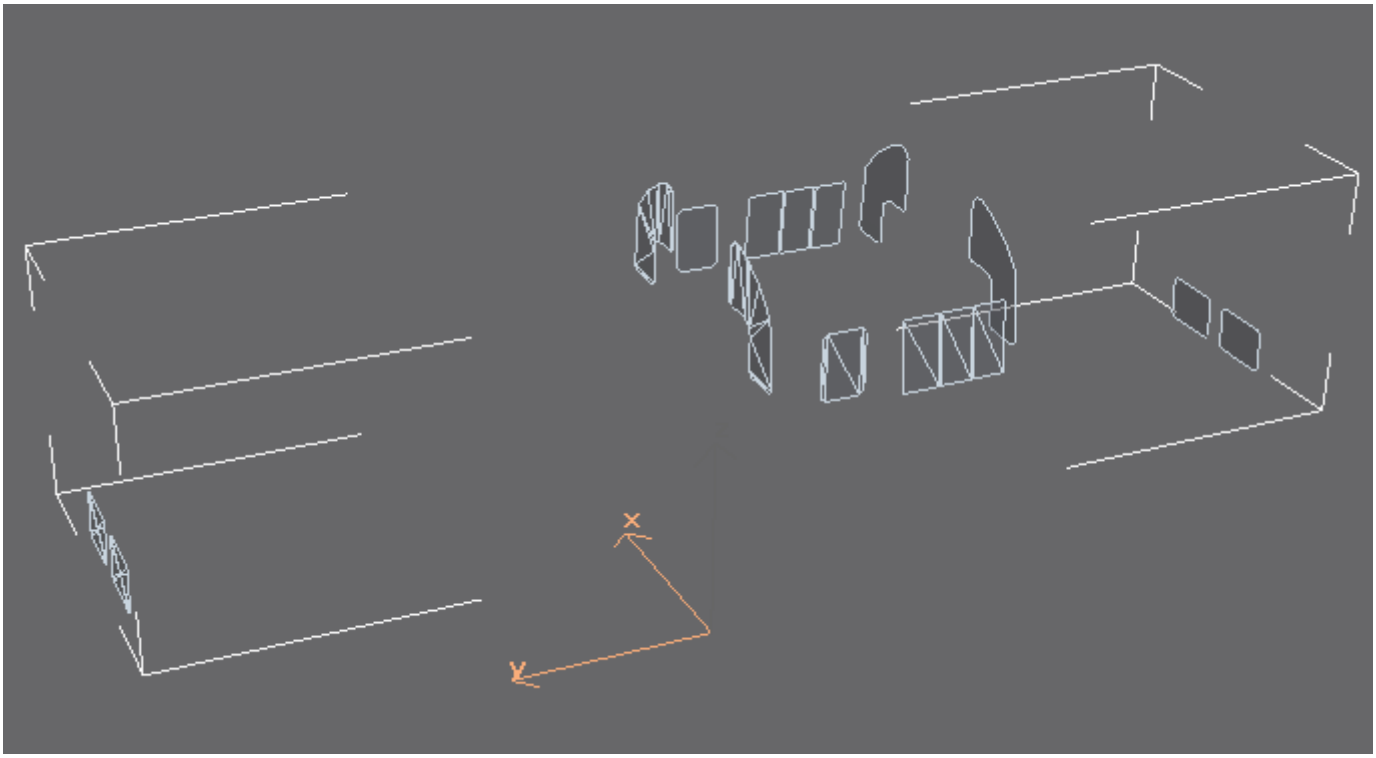
Better, but still the wrong sub-material.

Add an ‚Edit mesh' modifier and select all the polys. **Make sure that the 'Ignore Backfacing' option is switched off as otherwise you won't select polygons facing away from your viewpoint.**



Scroll the window below the modifier stack down until you can see the Surface properties and change the material ID to 2 by clicking on the spinners next to the field.

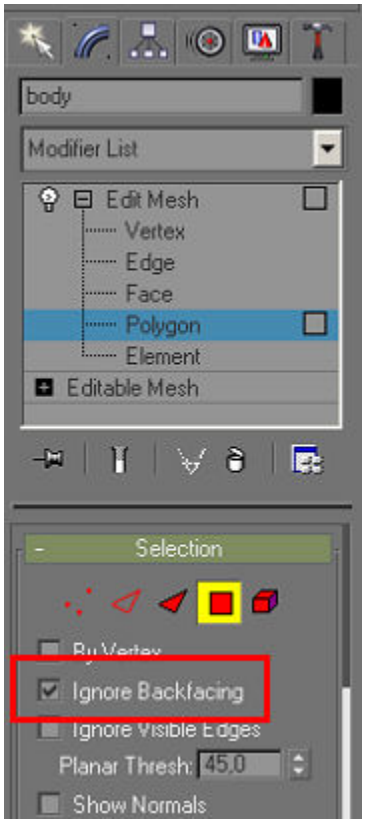




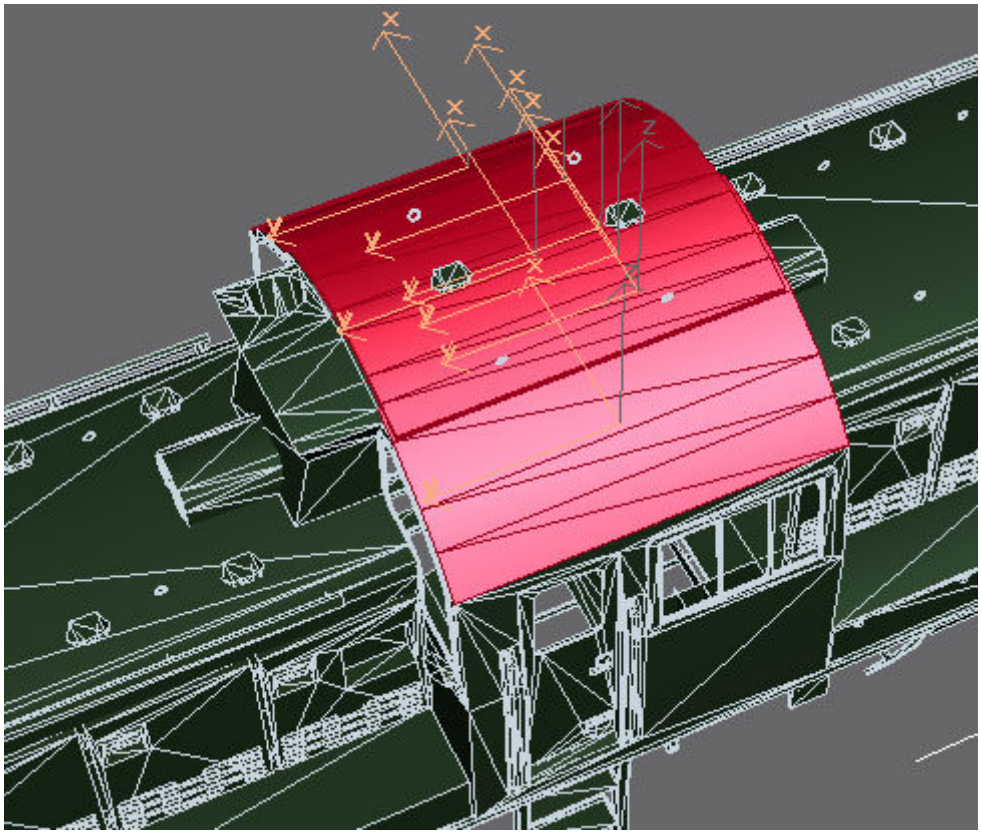
Note that now the transparent double sided material has been applied.

Re-mapping Parts of a Mesh

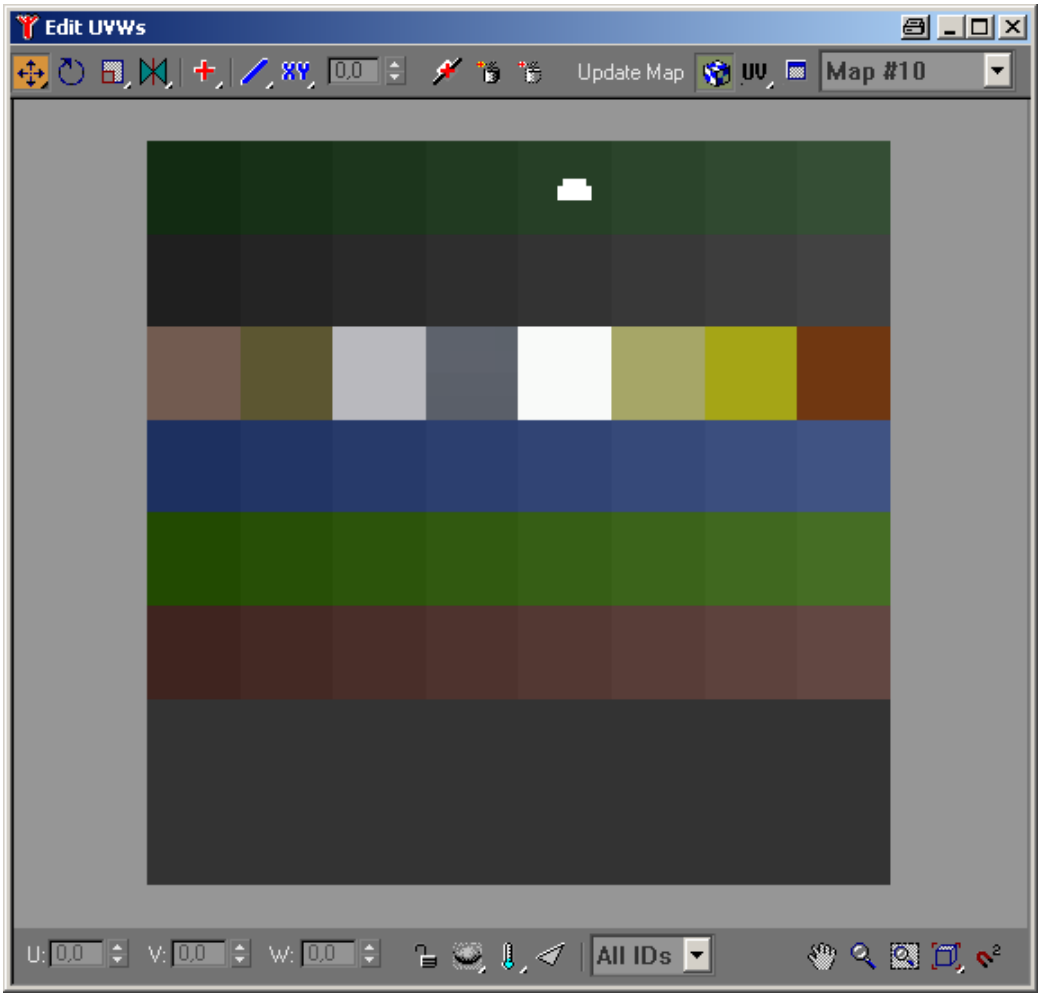
The second thing that needs some care is what to do when different colour patches need to be applied to the same mesh. In this case we'll make the cab roof grey instead of the green that is applied at the moment. Select the mesh and add an 'Edit mesh' modifier. Choose 'Polygon' mode as shown here and select 'Ignore Backfacing' to avoid picking polygons on the other side of the model.



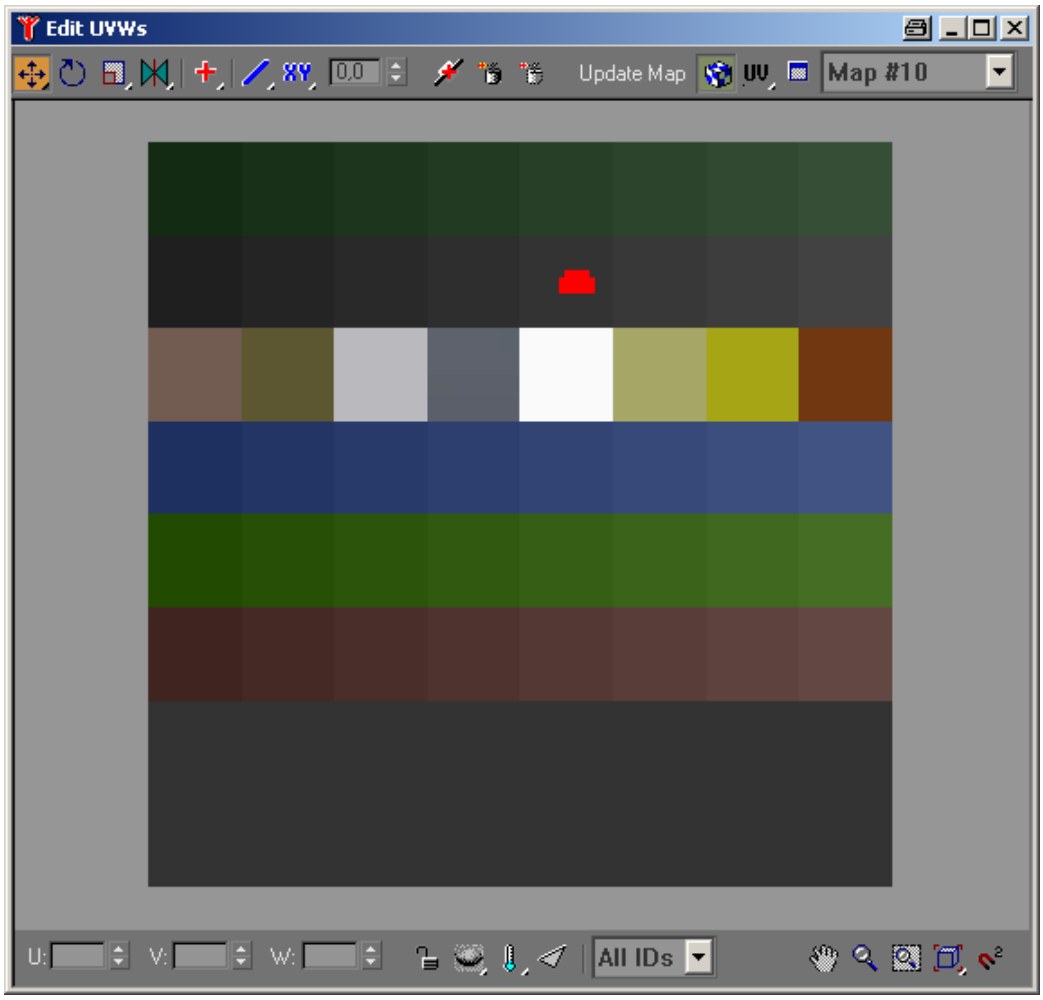
By pressing ‘F2’ you can make the selected polygons turn red which makes them easier to see.

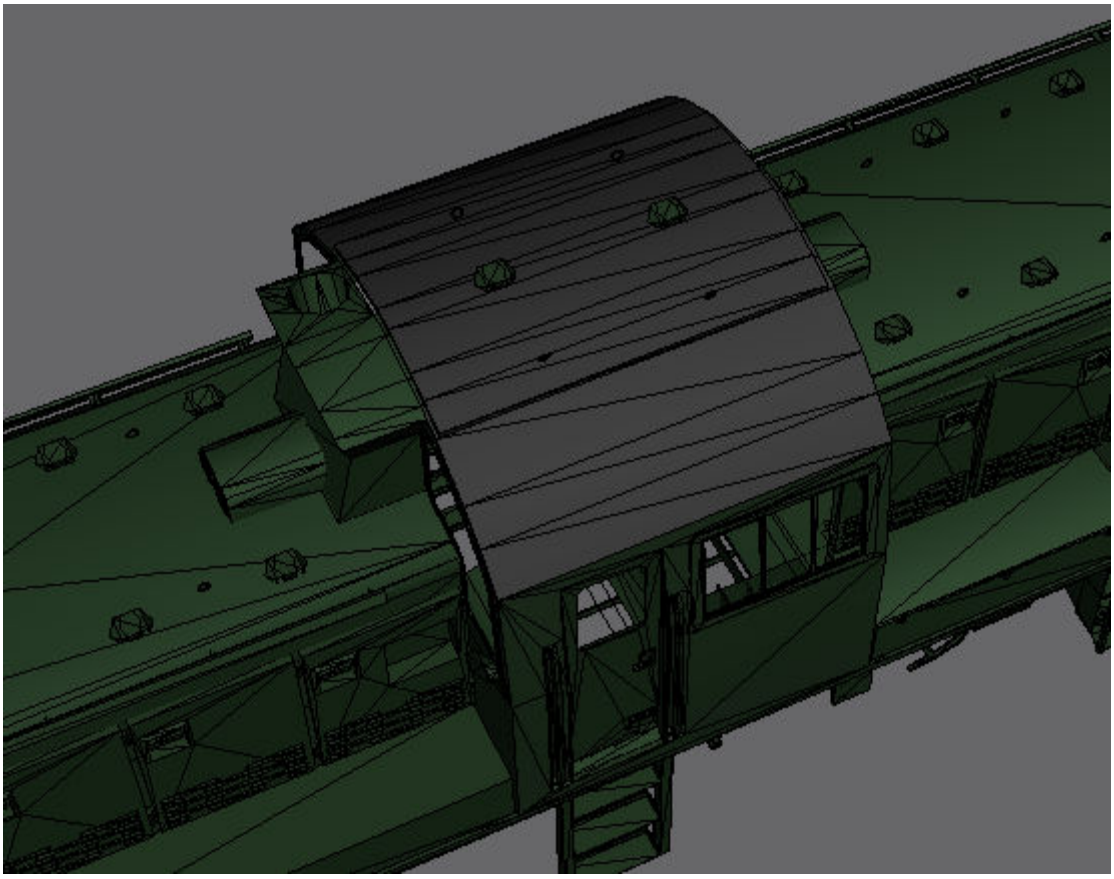


With the desired polygons selected add an ‘Unwrap UVW’ modifier to the stack and select ‘Edit’. The white blob is the current UVW mapping for the roof. Select and move this to another colour patch

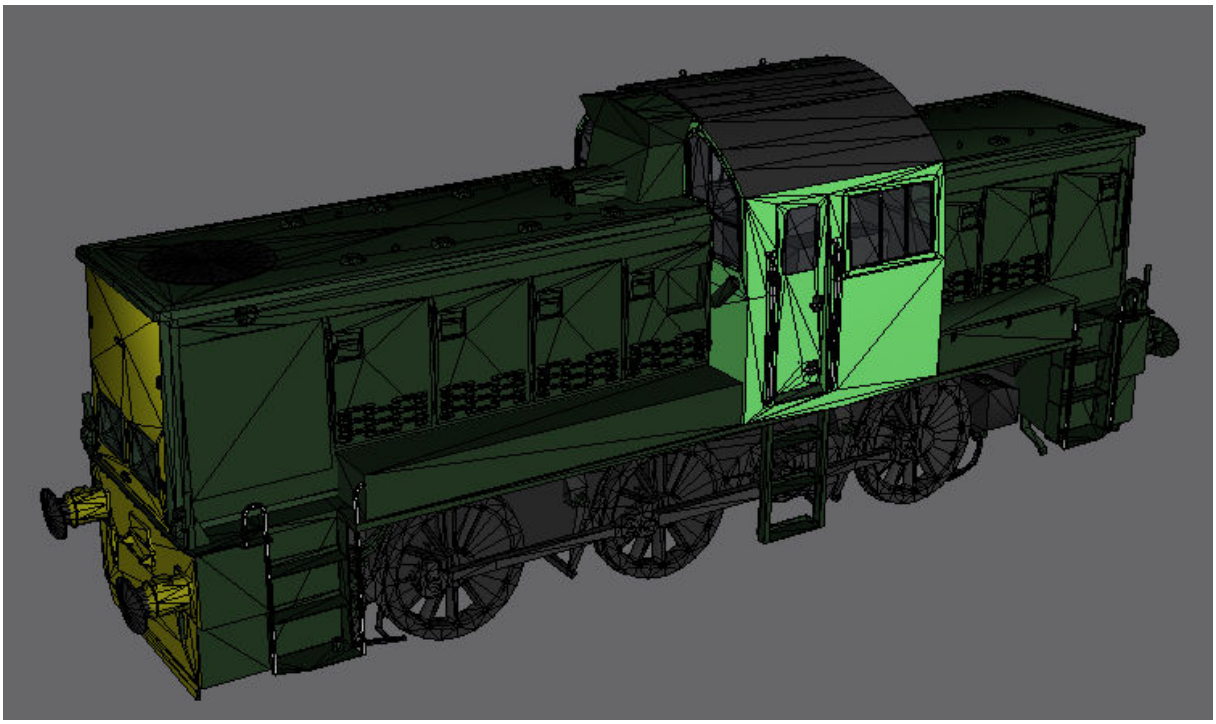


This re-colours the selected polygons.

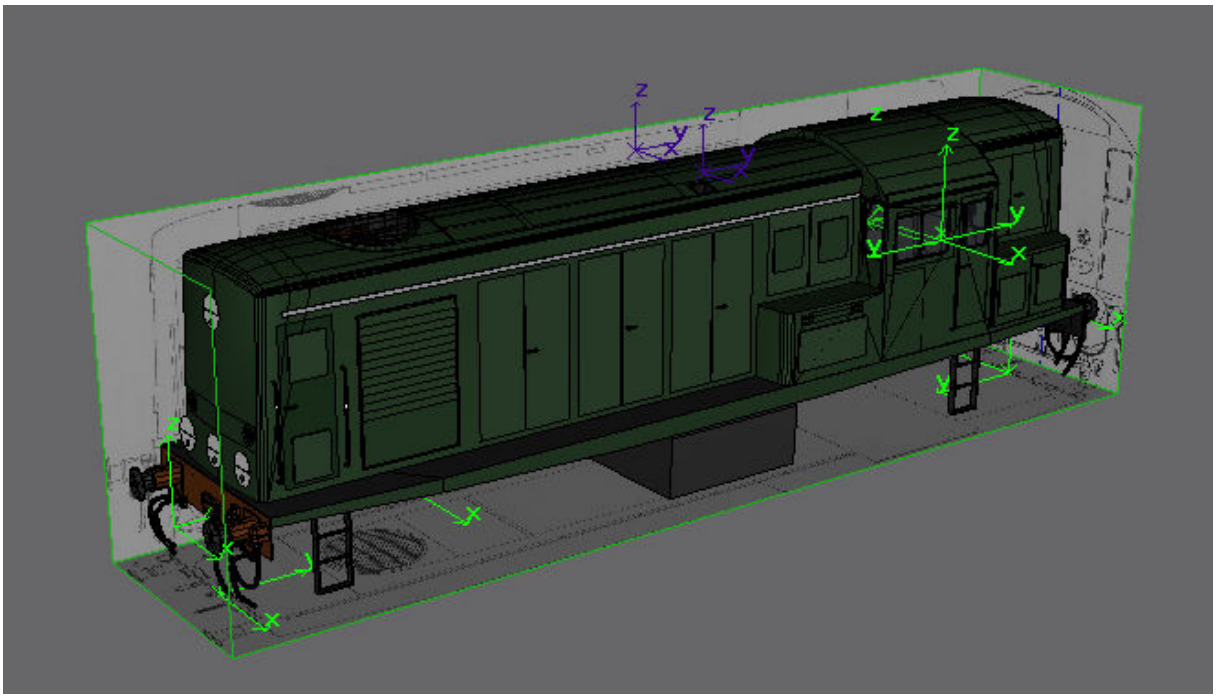


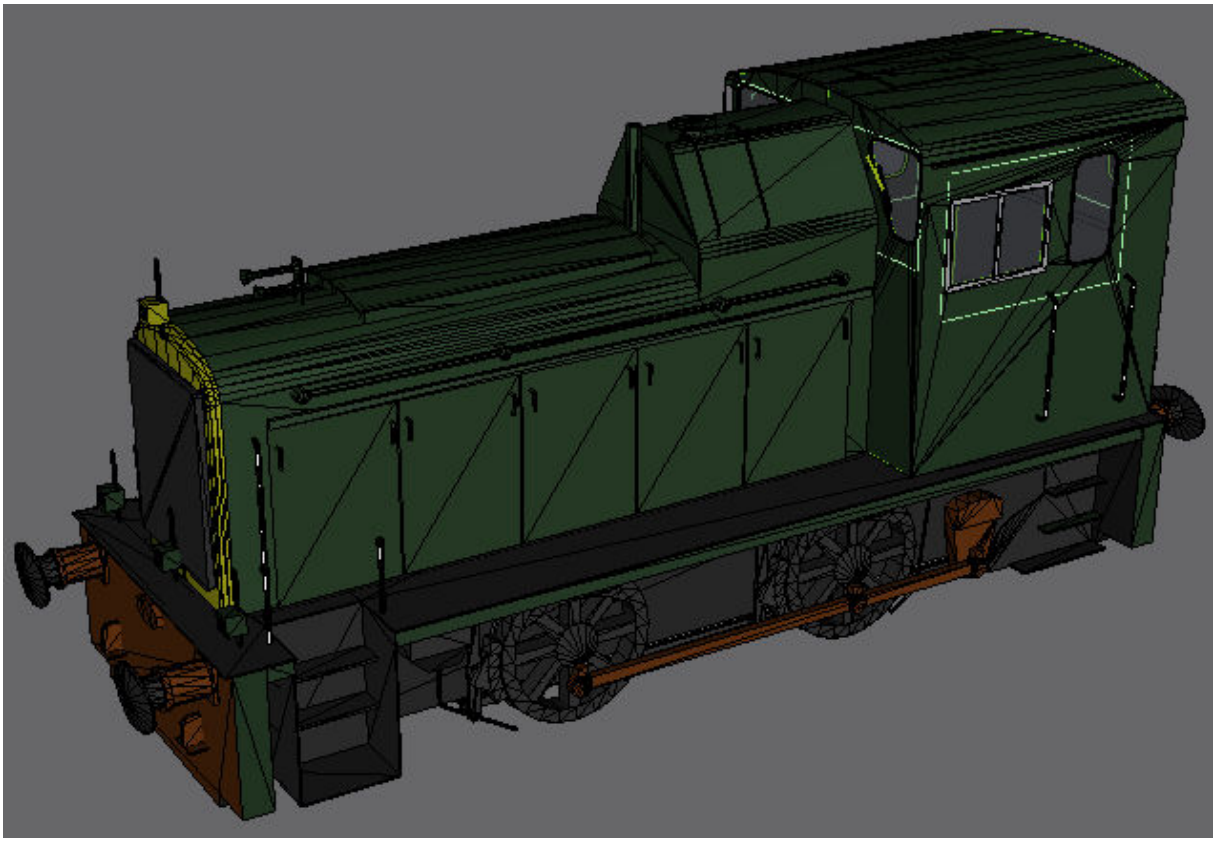


The rest of the model is textured in exactly the same way, the final result looks like this: Hopefully this tutorial has shown how easy it can be to texture models, the results are fairly acceptable and a good basis for enhanced skinning using the ChilliSkinner.



Some More Examples





Any questions, requests for more explanation or corrections needed – please mail me at paul.hobbs@web.de