

An Approach to Content Creation for Trainz

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Part 4

Enhancing Textures

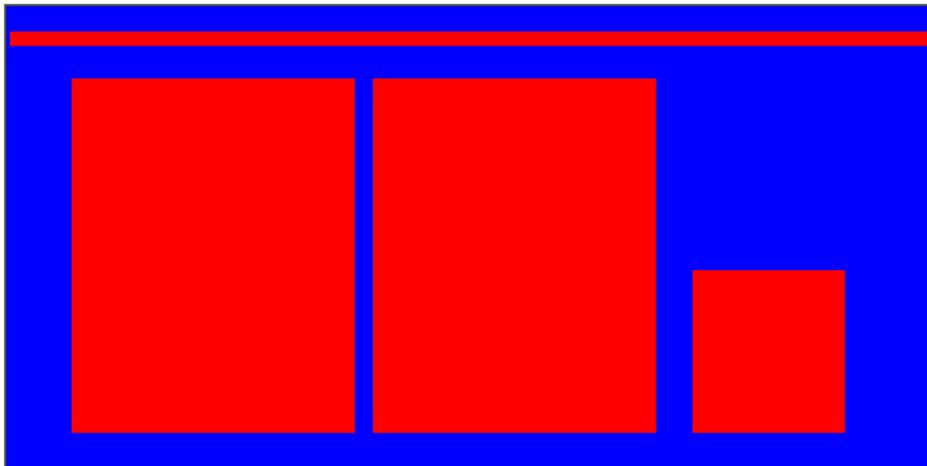
(Updates and sample files available from <http://www.44090digitalmodels.de>)

Enhancing Textures

A pet hate of mine is 'block' textures on a Trainz model, by which I mean areas of exactly the same colour all over it. Adding specular lighting to the mesh helps a little as this automatically adds variation to the colours that Trainz displays, but as Trainz doesn't display shadows on the mesh itself the texturing can still fail to bring out the detail.

Even if you are not 'artistic' (whatever that means) good results can be obtained by using simple techniques and a program like PaintShop Pro. I'll be using PSP 9 in this tutorial, other equivalent programs will have similar features – though a simple freeware bit map editor probably isn't going to be good enough as it is vital that it supports layering. Another good alternative is PhotoShop Elements, which is sometimes bundled with scanners or digital cameras.

I've knocked together a simple panel, which we can use as a basis for experimentation.

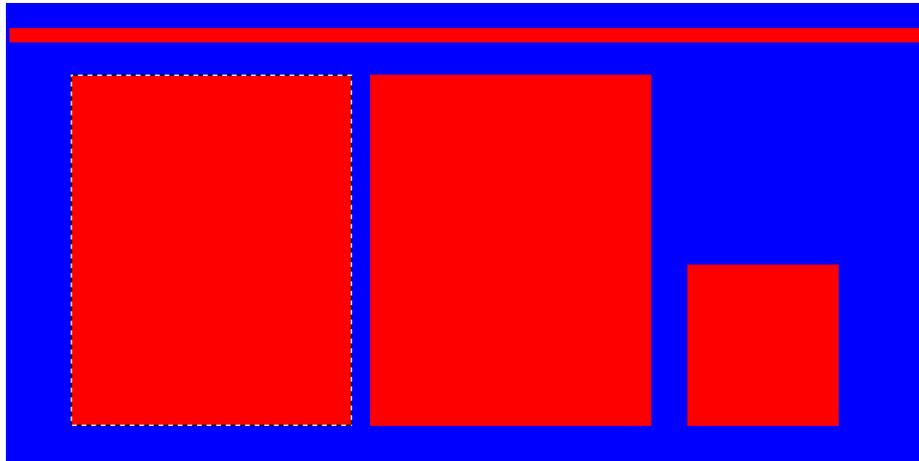


This will represent the bonnet side panel of a diesel shunter with two access panels, a recessed ventilation louvre and a raised strip. The idea behind the bright colours on the first layer is simply to make selecting these areas easier. With the 'Magic Wand' set to select an RGB value with 0 tolerance each of these areas can be picked.

The 'Magic Wand' is normally found on the left hand toolbar as shown. In the options for this tool (in PSP 9 normally in the top toolbar) you need to choose RGB value (RGB-Wert in the picture below, as I use the German version of PSP).

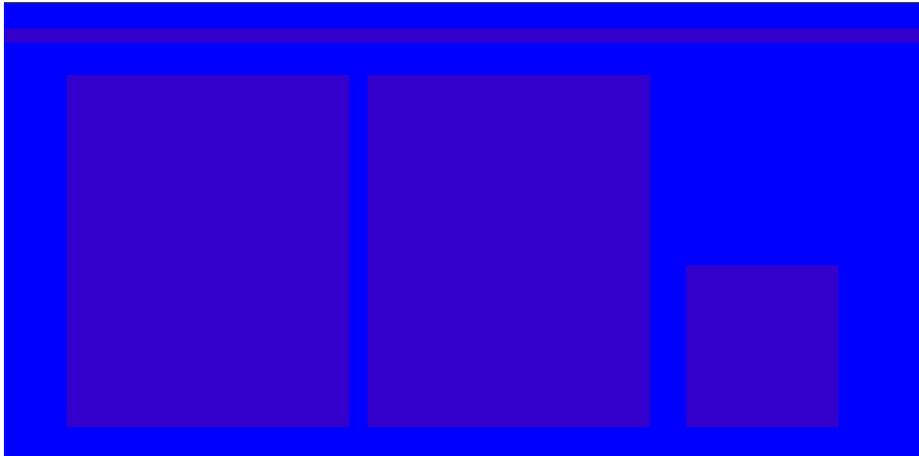


Select the 'Magic Wand' and click on one of the red areas. The selected area is surrounded by an animated dotted line. This can be filled with another colour, made lighter or darker etc. It will be necessary to experiment a little with your software to see exactly what is possible.



The best way to learn is to try things out, so we'll create another layer on top of the first one called 'colour' and fill this with something like BR corporate blue.

Reduce the opacity of this layer a little so that the background layer shows through like this:

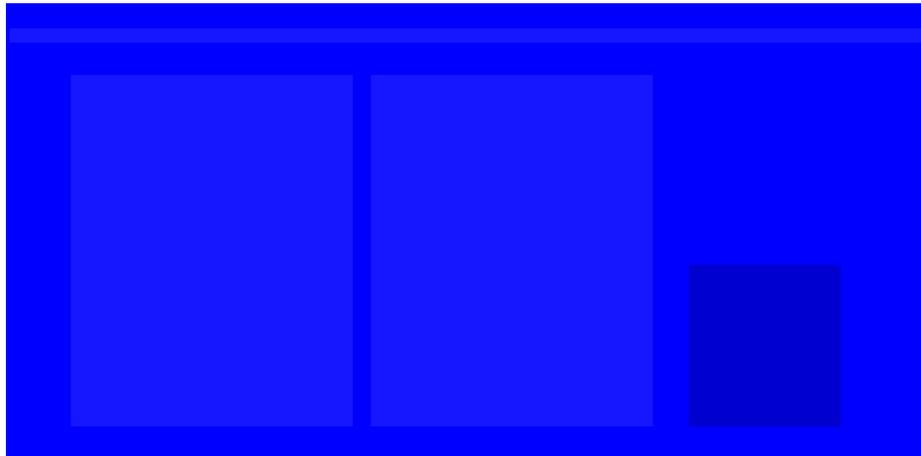


We'll attempt to suggest that the larger panels and the strip are raised and that the smaller panel is recessed by making these areas light and darker.

Make sure that the background layer is active (all layer capable bitmap editors have the concept of an 'active' or 'working' layer) and select the strip and the two larger panels with the Magic Wand.

Now make the 'colour' layer active and lighten the selection until the panels stand out. Make the 'background' layer active and select the smaller panel, then make 'colour' active' and darken the selection.

Here I've done this and made the 'colour' layer 100% opacity to hide the background layer again.

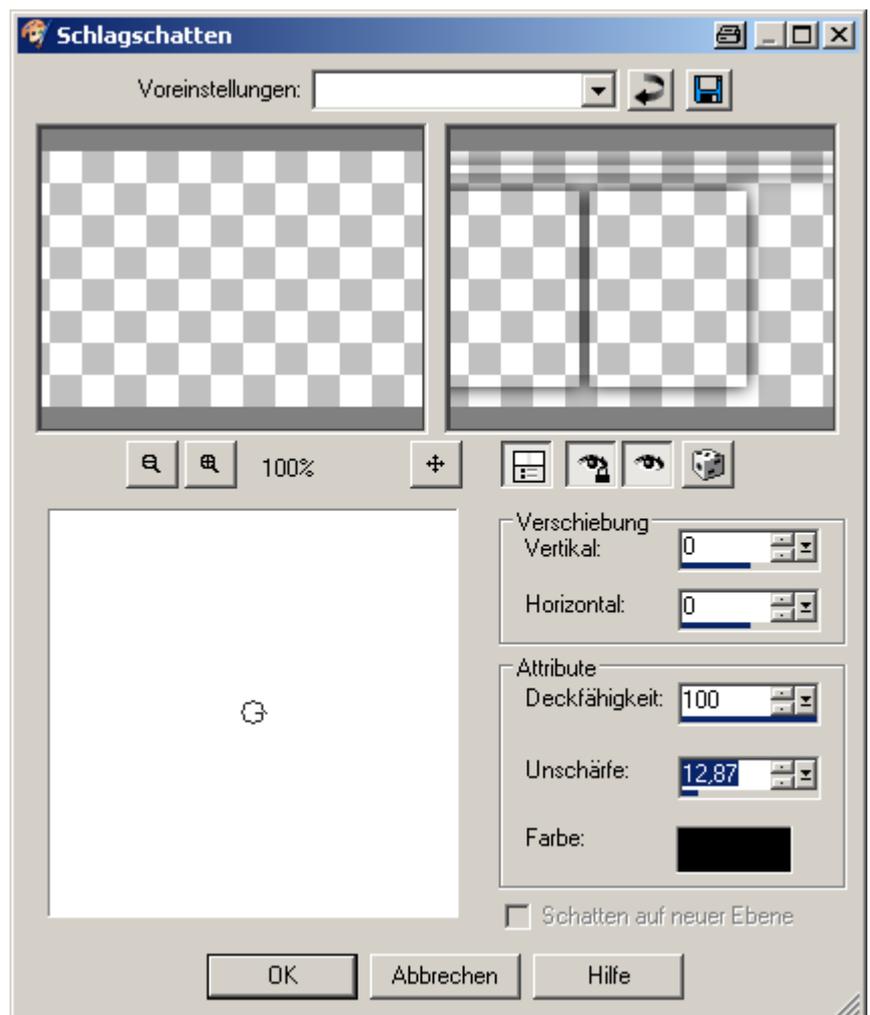


Hmm. Better than plain blue for everything but still pretty horrible. Generally panels become lighter in the middle, and darker at the edges over time, so adding a shadow to the blue area of the 'background' layer should help, this will also make the panels stand out.

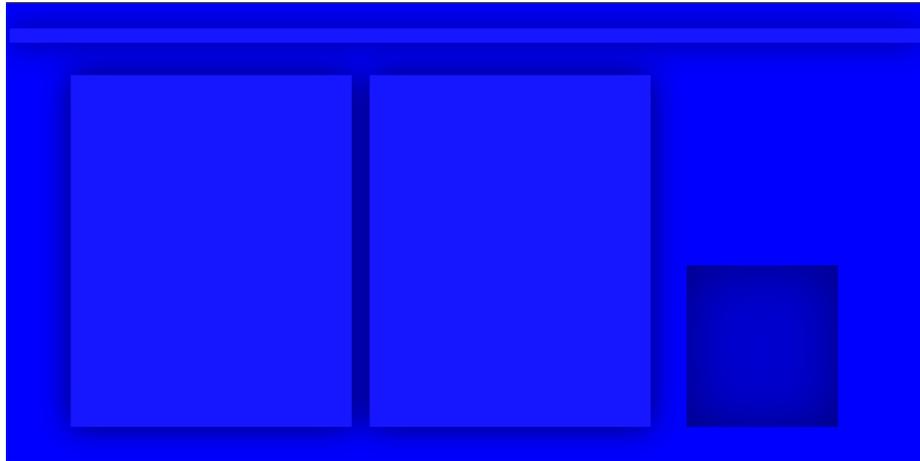
Make the 'background' layer active again and select this area. Create a new layer on top of the others called 'shadow1' and add a shadow effect to this layer.

Here are the settings I've used in this case – 'Unschärfe' is the size of the shadow in pixels, 'Deckfähigkeit' the opacity. I've changed the opacity of the whole layer to 60% to reduce the strength of the shadow.

Once again the key is to experiment with the settings you have available and to see what effect they have.

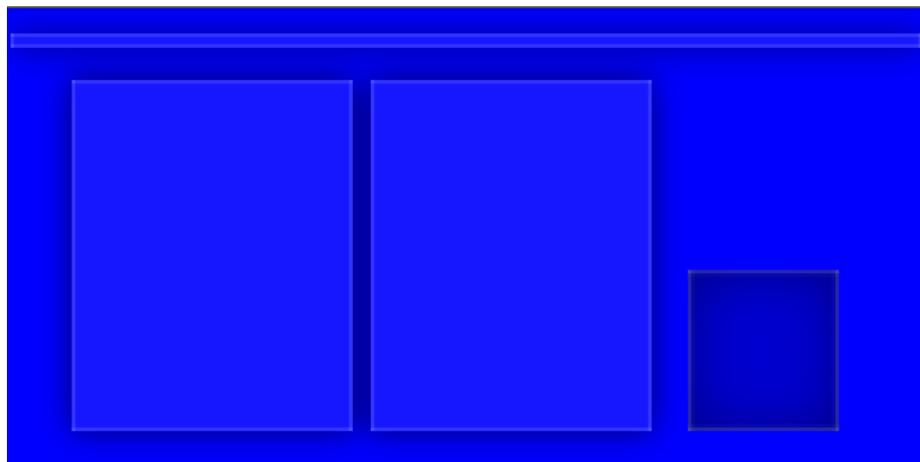


Another useful effect in PSP is the 'Cutout', effectively the opposite of 'Shadow' in that it adds a shadow or highlight effect to the inside of a selection. Create another layer called 'shadow2', select the small panel on the 'background' layer and apply the 'Cutout' effect. The skin should look something like this now.



The 'Cutout' effect can also be used to highlight the edges of panelling if the shadow colour is set to white. This creates a pleasing 'drybrush' effect.

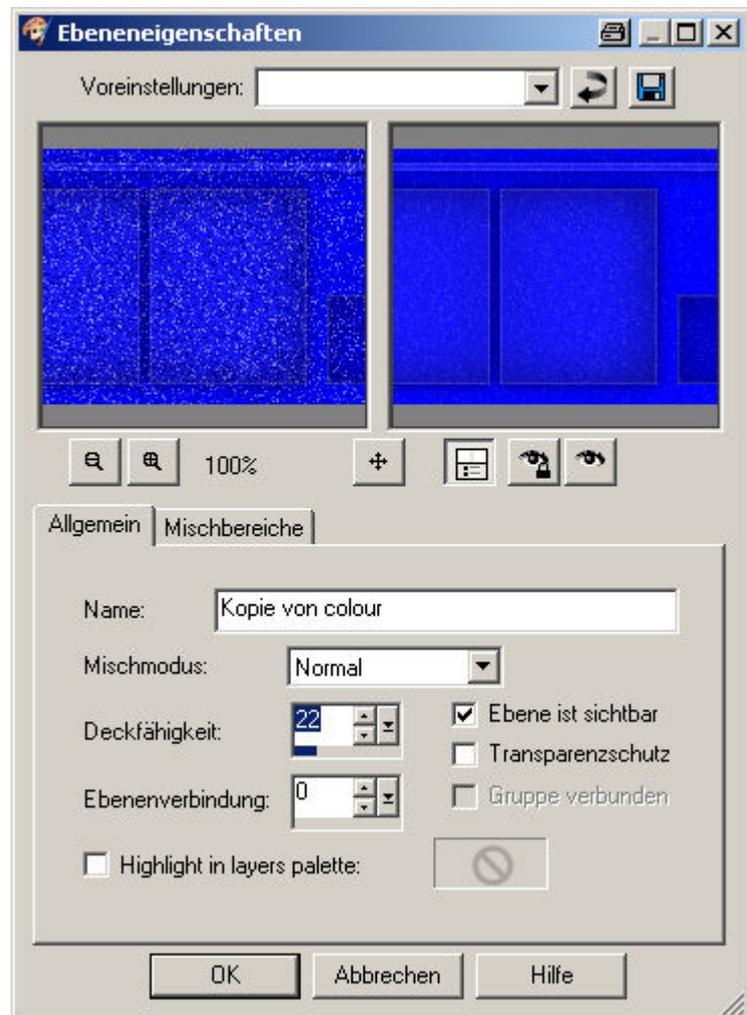
Select the all the panels and the strip again, create another new layer 'highlight1' on top of the others and try adding a light 'Cutout' effect. I've exaggerated the effect a little here for the purposes of illustration, normally it needs to be very subtle (opacity around 20%)



Looking better now I think. As panels tend to be lighter in the centre I've now added a 'Cutout' effect to the two large panels to darken the edges. This layer should be positioned underneath the 'highlight1' layer so that the edges of the darkened panels remain highlighted.



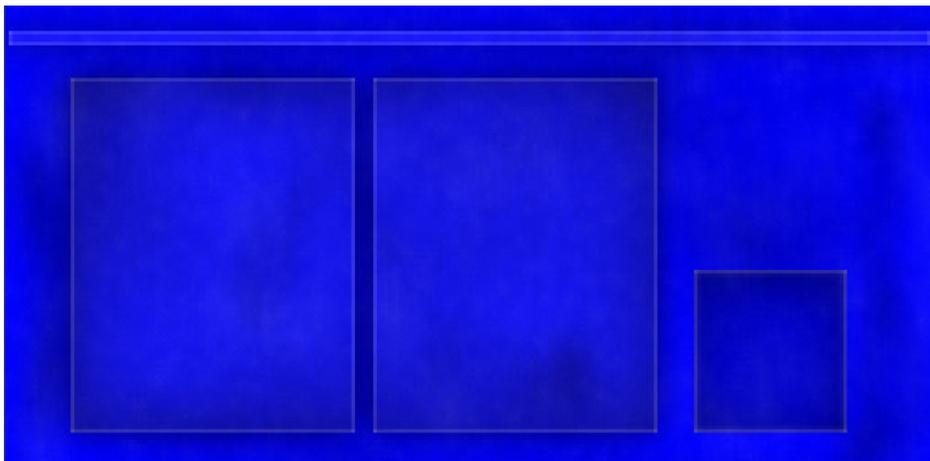
Now it would be nice to get rid of the plainness of the main colour. Duplicate the 'colour' layer above the existing one and add noise to the new layer. This scatters light/dark pixels all over the layer. I've then reduced the opacity of this layer to reduce the strength of the effect.



And now reduce the sharpness of this layer to blur it all together.

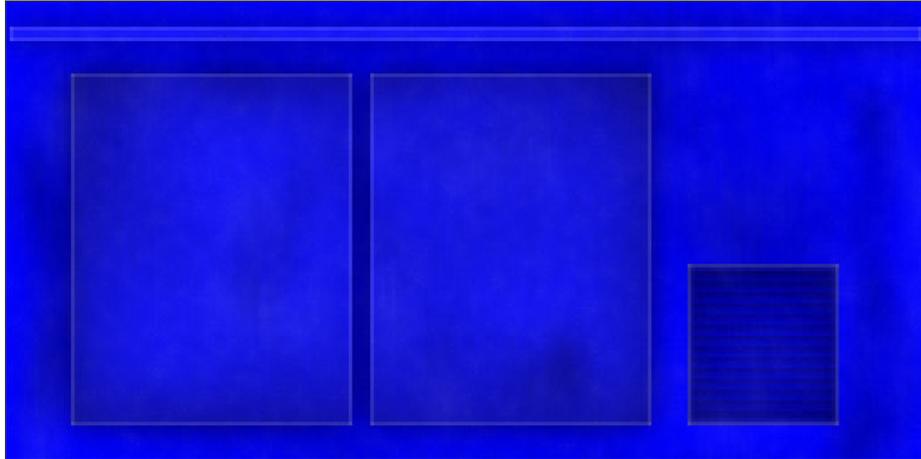


Not too bad, but still very uniform. We can overcome this by lightly spraying black and white on to two new layers and adding vertical motion blurring to suggest streaking.

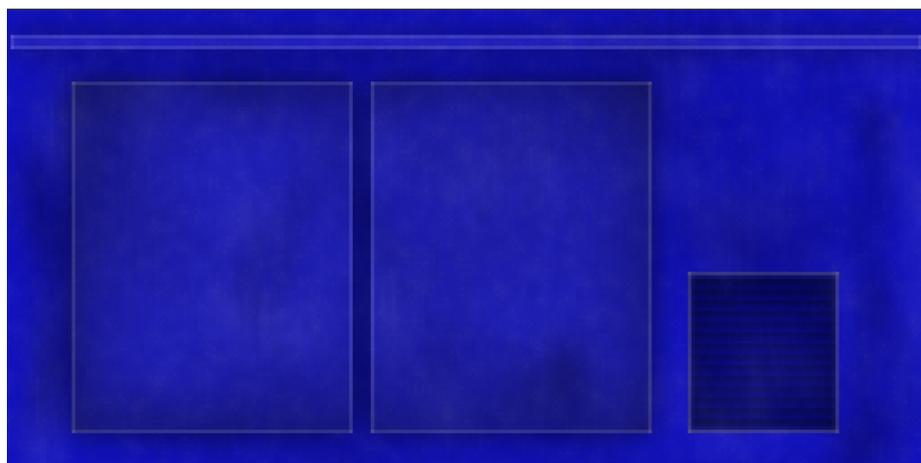


Again, a little playing around with the opacity of the layers will adjust the strength of the effect.

To add the louvres I selected a 1 pixel high strip inside the small panel (at the bottom) and darkened the colour layer by 20%. The next strip above it was darkened 40% and the third 60%. The graduated louvre was then copied upwards, all on the colour layer. The complete louvre was then selected and pasted on to its own layer.



The overall colour is still a bit bright, to tone it down a little we can add a 51,51,51 grey layer behind 'colour' and adjust the opacity of 'colour' so that the grey shows through.

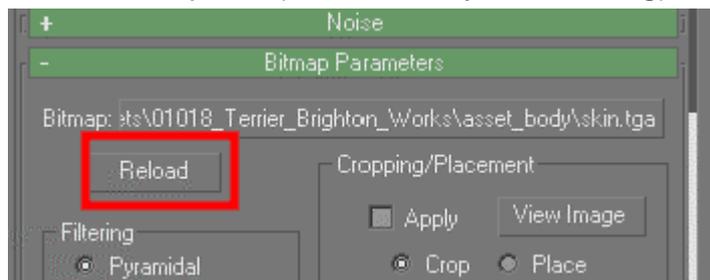


As you can see a little experimentation goes a long way, looking at photos also helps to see where dirt collects on locos and where streaking is likely.

Another demonstration of the possibilities follows, adding some enhancements to the skin of the 'Brighton Works' Terrier. This is the current state of play – a 'clean' skin with on extra highlights and shadows.

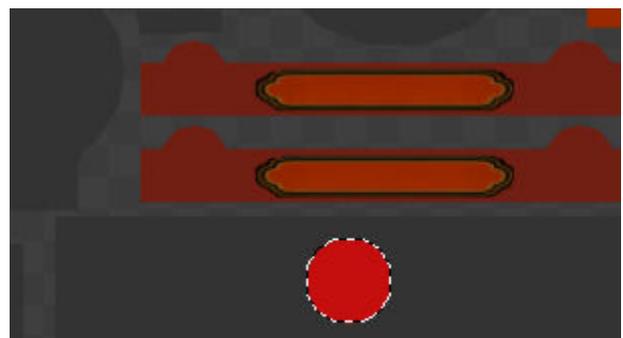


The joint between the chimney and the smokebox could be emphasised with a 'soft shadow' for example. Open the skin in PaintShop Pro (or whatever you are using) and the model in GMax. In the Material Editor and find the 'Reload' button. Keep this dialog box open when working on the skin in PSP.

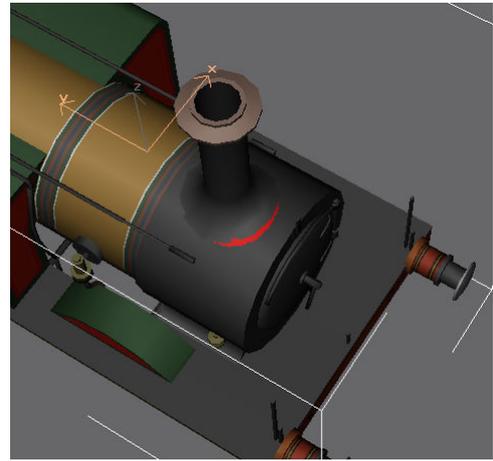


In PaintShop Pro save the skin again as the *.tga that GMax is displaying (skin.tga in this case). Every time you make a change to the skin save it in PSP, switch to GMax and hit 'Reload' to update the skin on the model. By jumping backwards and forwards between the two programs you can easily check the results are what you expect.

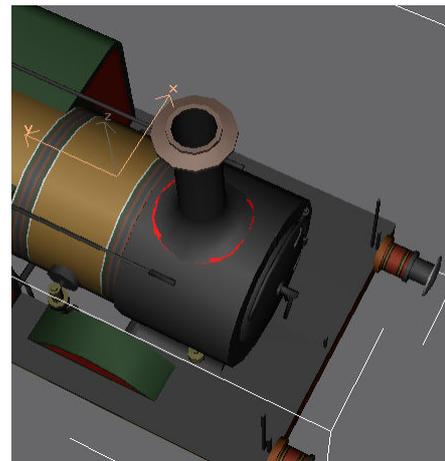
So how do we know exactly where the shadow for the chimney should be on the skin? The easy way is simply to create a circle on another layer on the skin, fill it with colour and check the result in GMax. Keep going until the circle is just hidden



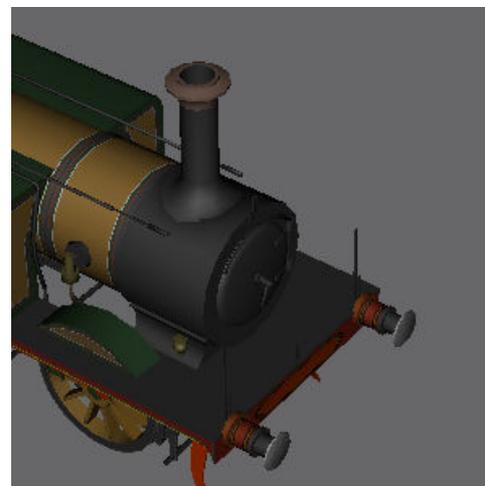
by the base of the chimney. Here's the first attempt, the red circle is slightly too far forward and a little too small.



Next attempt – the circle is positioned correctly but now too large. A reduction of 3-4 pixels should mean that the chimney base would hide the circle.



Here is the result with a 'soft shadow' applied to the top of the smokebox



The effect can be seen well in the dome area.

Using this technique the skin can gradually have shadows added to enhance it.



The coal rails have also had edge highlighting added (with the 'Cutout' effect) and extra shadows to bring out the detail. Here are the coal rails before and after:



Hopefully this document has given you a few ideas on creating more realistic skins.

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