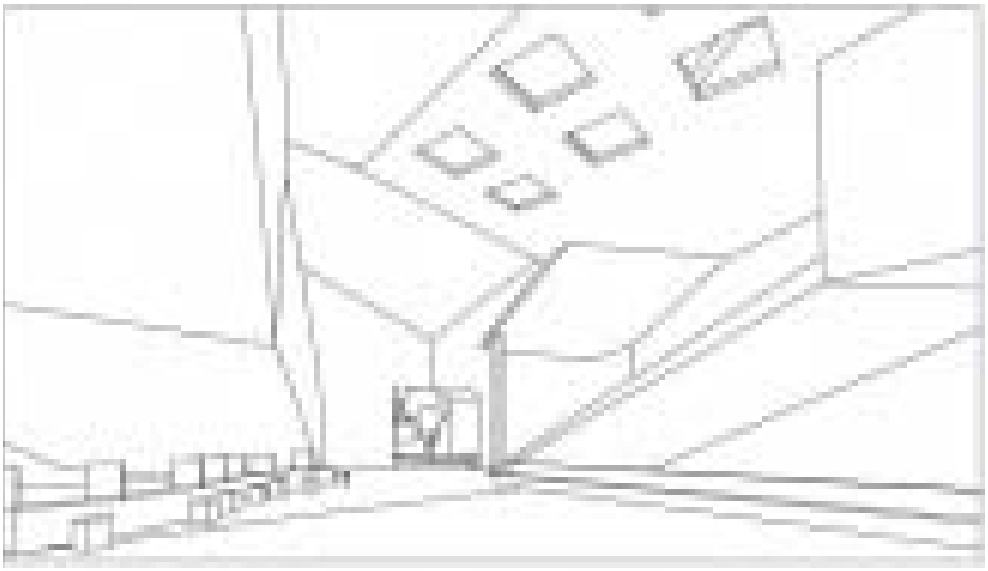
PHOTOSHOP RENDERING TECHNIQUES

J.Cheung (Nov 2013)



Photoshop, adding material, light and shadows

The image we have now in Illustrator is fairly clean and sterile, we now want to add some atmosphere by using light, material and shadows. To express the architectural concept without getting too much into detail.

Photoshop (or Gimp) is the preferred program to do so, as it offers a certain freedom in drawing shadows and light. In the following steps we will discuss setting up the photoshop part, how to create shadows and light, and how to add materials.

Setting up the Photoshop part

If we want to create an image that we later on can use again in our Illustrator file, we need to make sure the images are aligned, in other words: making sure everything fits together when we combine the different files. The easiest method would be to make sure that in both Illustrator and Photoshop you are using the same paper size, A4 for example.

Now simply copy and paste the rendered line drawing from the Illustrator file to your Photoshop file.

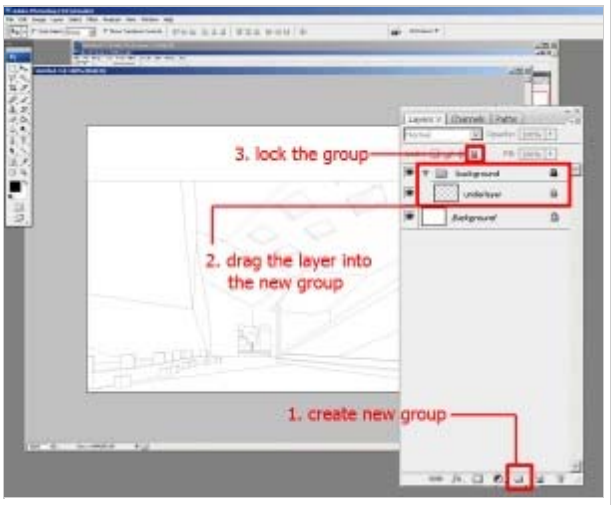
Layer structure

The use of layers in Photoshop seriously increases the workflow, the ability to change things, and dis/enable certain parts. Therefore we want to have our background linedrawing function as a background only. Thus lock the layer by using the small lock icon the the layer menu (see screenshot).

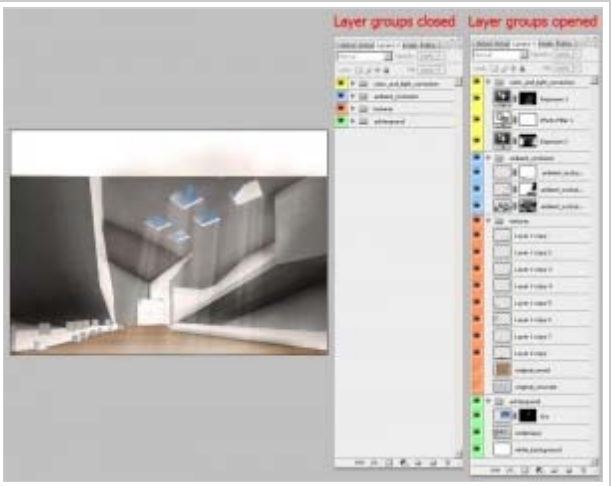
Also, when working in Photoshop, the large amount of layers can be really inefficient. Therefore, make sure you're using **layer names** (double click a layer) and **layer groups** (folder icon in the layer menu), these really help to structure your Photoshop file. Have a look at the screenshot to get an impression of a possible layer structure, where you can see the layers are placed together in groups, that have names so they are easily distinguishable from each other.

When using layers in a structured manner make sure you are working in seperate layers. For example, if you want to draw shadows in the image, do that in in a different layer, not in the background one (which will not work anyway because its locked).

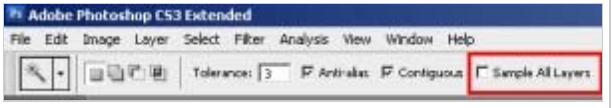
A lot of Photoshop tools have the option to **"sample all layers"** and not just the one you have selected. Its advantage is that you can use the tool in your new empty layer, but it will take into account the other layers. In the shadow example, you can use the "Magic wand tool" to select certain parts of the locked background layer, and start drawing in the new empty layer. This method is very important if you want to work **"non destructive"**, which means that you only add information (by using new layers), and do not remove or overwrite any. This will help you to more easily make changes later on.



Creating a layer group



Using layer groups and name to structure the file



Sample All Layers

Adding materials

Next we will add materials to our scene. The workflow is as followed:

- Use a (selfmade) texture that **covers a large physical area**. A texture that is 2 by 3 bricks stretched over 30 meter walls look ridiculous
- **Duplicate the texture's layer**, hide the original
- Hit **CTRL+T** in the new layer. This will give you the transformation tool
- Hold **CTRL** and drag any of the corner points. You can easily **distort the texture** to fit the perspective and the surface you want to attach it to
- Take into account the **scale** of the texture and the **laws of perspective**
- **Remove the parts that you don't need**, by using the magic wand tool and the sample all layers option to select the parts where the texture should be hidden. Use a clipping mask on the layer to do this (see below).

Creating soft shadows

Adding textures to the emtpy scene increases the desired effect, which is to communicate the design. But it still looks somewhat flat. Therefore we will add some soft shadows. These shadows are not cast from the direct sunlight, but are a result of the diffuse light that is all around. These soft shadows give depth to corners and the image overall.

In 3D this is often referred to as Ambient Occlusion or a dirt pass. In this situation we will discuss making one ourselves with the use of Photoshop, as this method is not related to any 3D program, as we will draw in a image that not necessarily has to come from for example Maya. However it is possible to let Maya render an Ambient Occlusion pass, that offers similar result, and does not require any "handdrawing", information on this topic can be found in the Mental Ray Ambient Occlusion tutorial.

Applying textures, before and after

The first step is:

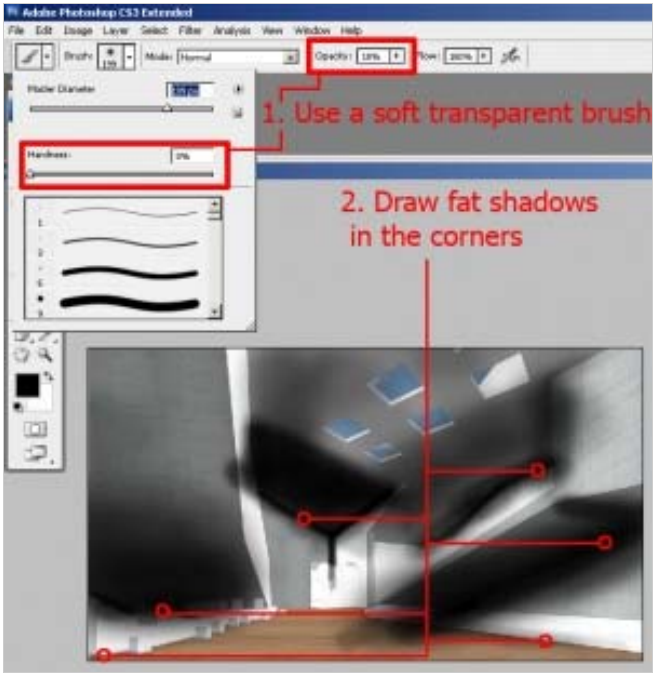
- Create a **new layer** for your shadows, **name** it, put it in a new shadow **group**
- Grab a **soft brush** (hardness 0), and drop the opacity to 10-30 percent
- Make sure you're drawing with a **black color**
- **Draw thick fat shadows in the corners**, don't worry about them being too much
- Don't forget the '*corners between floor and furniture*

Masking

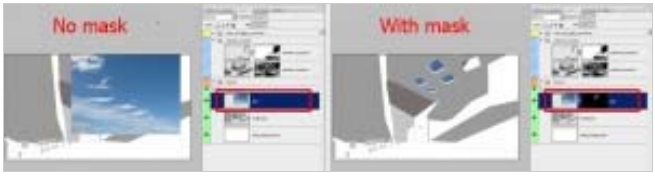
Obviously you will not get it right the first time, so corrections are necessary. But we are not going to use the eraser tool, as that will permanently erase our information. Instead of that we will use the masking function. As shown in the simple example, a mask is a greyscale image that is attached to a layer. This greyscale image controls what parts of the layer are visible, and which parts are not. The black mask parts are made invisible, the white parts will be visible, by using greytones you can make something partially visible.

The big advantage of masking is that it leaves our layer intact. So all the information is still in there, it is just made invisible. This method is preferred over the eraser tool because by simply using a white color in the mask you can make parts visible again.

To make a mask, select a layer and click the mask icon in the layermenu. Select either a grey, white or black brush, and make sure the mask (and not the layer) is active, you can check around which one there is a thin rectangle. If the mask is not active, simply click it, and you can start drawing. You will not see the black/white/grey in your view, but the result of you drawing the mask on the layer, it is just like erasing, but with a brush instead of the eraser



Drawing the first shadows



Drawing the first shadows

tool.

So in the render we now want to make the shadows less fat. Create a mask for your shadow layer, and start drawing black in it. If you are using a soft transparent brush (10% opacity) you will have the best results. If you feel that you removed too much shadow, simply change the color of your brush to white, and draw in the mask to bring back parts of the shadow.

This method for creating the soft shadows is fairly simple, but can be quite a lot of work, as you will constantly have to remove and add shadows, to see if the result is what you want.

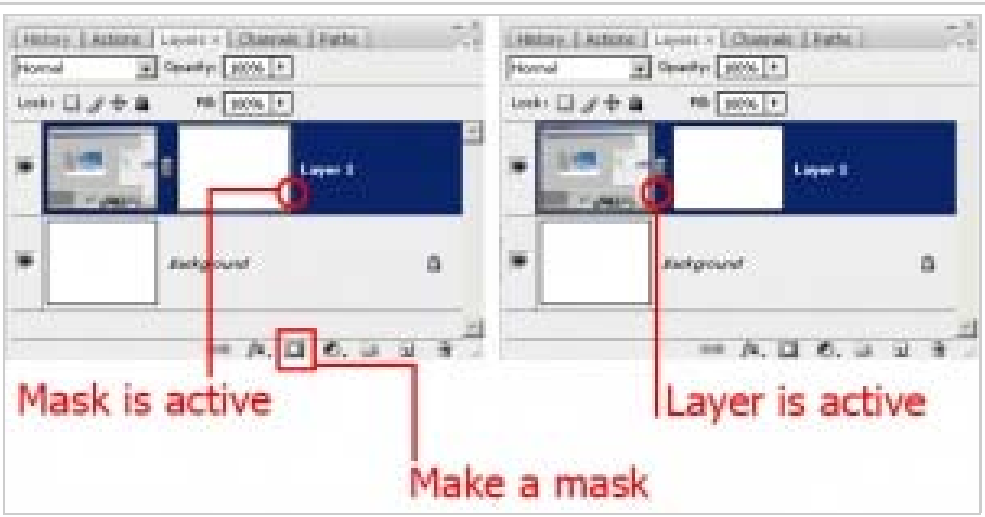
The result

Creating light and color correction

Now we have upgraded our render with textures and shadows. But we really want to **emphasize the light and the ambiance** in the space. Again Photoshop to the rescue, we will correct the color and add some light rays coming from the rooflights.

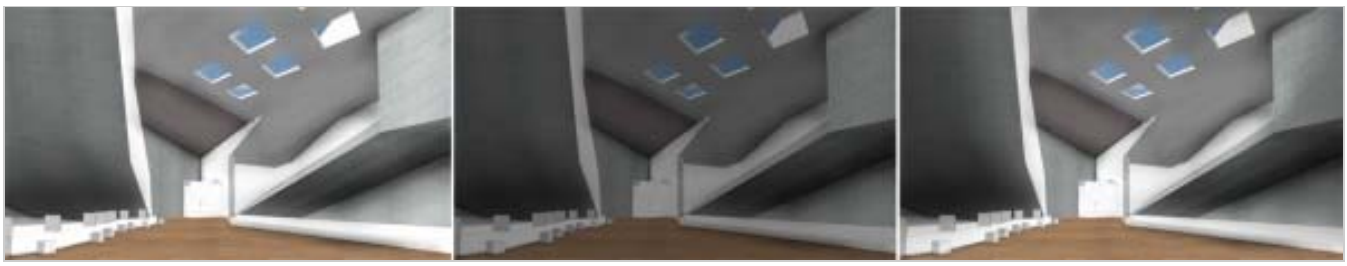
Using exposure

The image we have now is quite evenly lit. But some should be a little darker than others because they catch less light coming from the roof. So what we want to do is make the area's that are further away from the middle a little bit darker, nothing extreme, but just to highlight the middle area more, we call this **localization** of an effect.



Note the thin rectangle around the active layer or mask

Underexposure, normal, overexposure



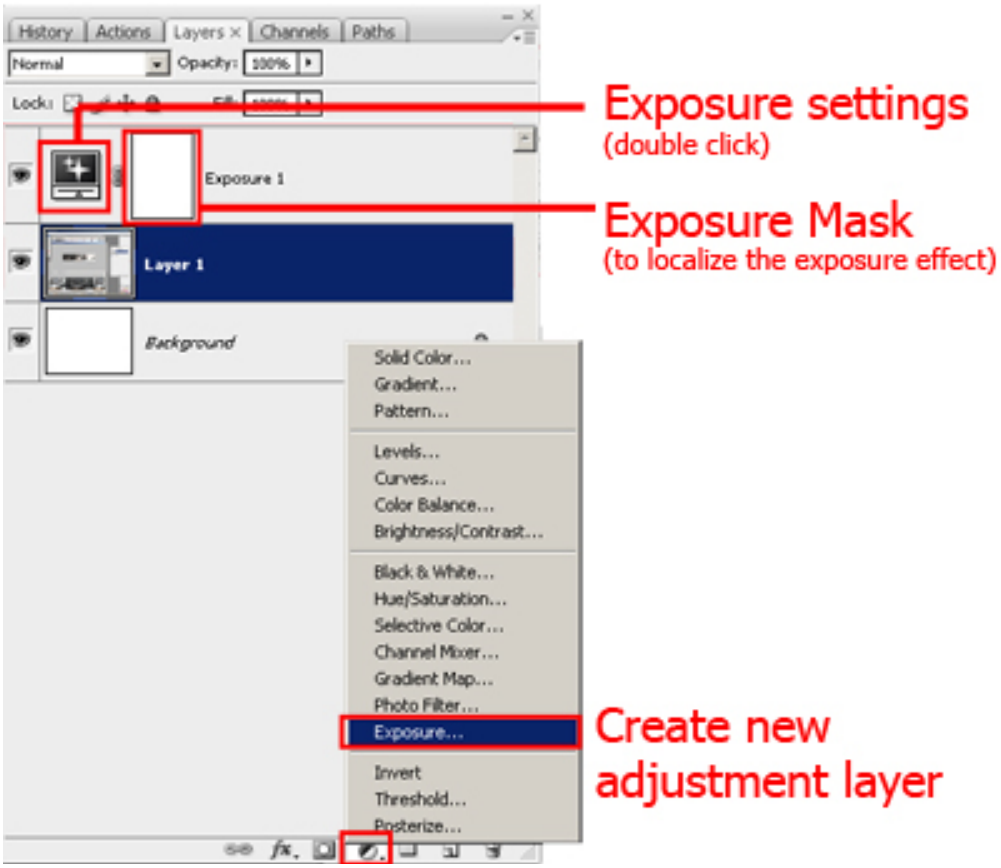
Normal, underexposed, localized underexposure (sides)

For this we are going to use the **exposure function** from photoshop. And keeping in mind that we want to work **non-destructive**, we are going to use so called **adjustment layers**.

With the exposure function you can make an image lighter or darker, as would increasing the exposure time on a camera. Compared to the levels, curves and brightness functions the exposure has less effect on the contrast, it just makes the image brighter or darker.

In the layer menu click the icon for the adjustment layers. These are seperate layers that can be changed afterwards (unlike the functions used via Image > Adjustments > ...). Also when using adjustment layers photoshop automatically attaches a mask to the new adjustment layer, letting you **localize the effect of the adjustment layer** (see the mask section on this page).

Now for our project; Simply make 2 new exposure adjustment layers, one under- and one overexposed. By drawing with a soft transparent brush (10% opacity) in the overexposure layer one can make light rays (the whole mask is black, but the rays, which are white, thus overexposed). And in the underexposed layer we can make the sides of the image darker by using the same brush (the middle of the mask will be black, thus normal, the sides white, thus underexposed). See the images for clarification.



Begin, general overexposure, localized overexposure

Color corrections

As a final step,one could say that our image lacks a bit of warmth. In the previously mentioned adjustment layers you can find the so called **photo filters**. These can make an image cooler or warmer, select one of your preference.

Photofilters; warmer, normal, cooler

Using Gimp instead of Photoshop

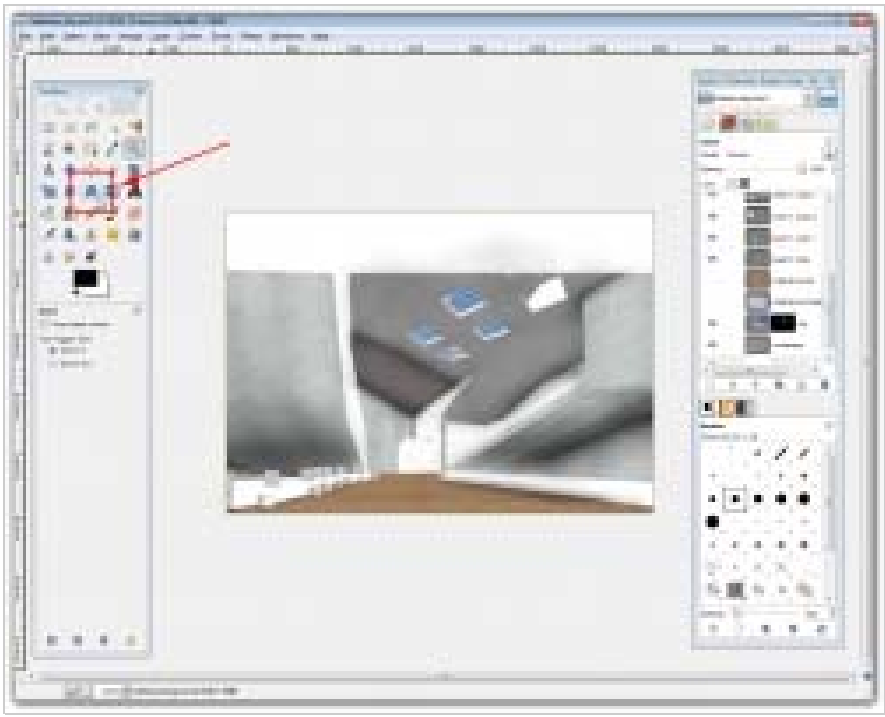
Gimp is a free 'Photo Editing' software available from gimp.org (http://www.gimp.org) . Although Gimp isn't as sophisticated as Photoshop, most of the options we use for the conceptual architectural visualization can be found in Gimp as well. In this tutorial a few basic options are explained. More information can be found in the Gimp user manual (http://docs.gimp.org/2.6/en)

Distort textures

To create the effect of a perspective view we use the 'Perspective tool'. With this tool the corners can be grabbed and dragged in such a way that a perspective illusion is created.

Distort textures

Gimp also has a brush which can be used to create the 'ambient occlusion'. After clicking on the brush tool, the brush options show. Here we can change the opacity and the scale (only till 10.0). But we can't change the hardness of the brush. To change the hardness we actually need to change the brush type to a softer brush.



Distort textures

Layer masks

To make a layer mask in Gimp we need to select the layer we want to add the mask to and go to:

Layer » Mask » Add Layer Mask

A window pops up with several options. Leaving it on 'White (full opacity)' is usually good. We can now draw with black to hide things within the layer.

Adjustment layers

Adjustment layers don't exist in Gimp. Therefore we have to find a work around. In this tutorial we either want to make parts of the image darker or lighter. What we can do is create a new layer above all the other layers, for instance a white layer to make things look lighter, and use different 'modes' and 'opacity' on that layer to change the appearance of the layers underneath. A bit of trial and error should get you close to what you want. Off course layer masks will still work to localize the effect.

Photo filters

Photo filters need the same approach as adjustment layers. To make your image appear warmer, add a layer with a warm color above all the other layers and play with the 'opacity' and 'mode' of the layer.

Finalization

Now we have completed our image in Photoshop (or Gimp), it is time to combine them in Illustrator (or Inkscape).

From Photoshop to Illustrator

Do not just copy/paste or open your newly created photoshop image directly into your Illustrator file. If you do this, it will be harder to make any adjustments to the file. Instead of opening it directly, you should **link the file**. Which means the file is not imported into Illustrator, but merely loaded. If we change the original file, it gets updated in Illustrator. For more information about linking, see Advanced Illustrator.

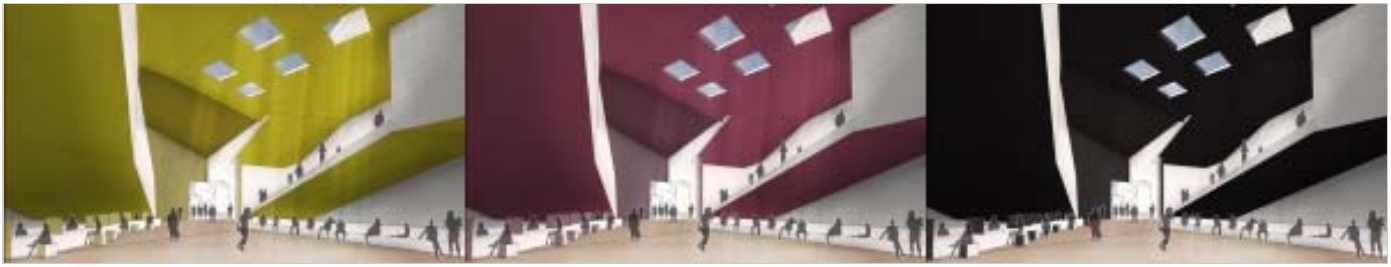
Now we have our image in Illustrator, we need to think of our layer structure, and the how to use our image with the colored line render. The recommended order is putting the colored line render in the back, the photoshop image in the middle and the scale figures (people) on top.

Creating variations

This layer structure offers us the possibility to try different ways of **mixing the photoshop image with the colored line render**. If you select the image, and open the transparency menu (next to the stroke menu, or via Window > Transparency), we can use the opacity to mix it, or we can use different blending modes, of which multiply is a very powerful one. Depending on your wishes, a opacity of 75% and multiply blending can give the best results.

Mixing the Photoshop image with the colored line render

Because what we can now do is **lock the image layer**, and use the paint bucket tool to **change the colored line drawing** that is in the back (remember the triple clicking shortcut). Within a mere matter of seconds we can create numerous color variations for our Conceptual Architectural Visualisation. And if you want to change the photoshop image, just open it, alter it, save it, and it will automatically be updated in your Illustrator file.



Color variations

Color variations

A quick adjustment of the original image results a in totally different space