Textures

There are two types of Textures in Blender. **Procedural Textures** that are by default created by the program and **Image Textures** that use external images.

We will first see how you can apply a Procedural Texture and then how to use and control image Textures, using the Unwrapping technique.

**Procedural Textures**

As we said Procedural Textures are not images but textures that Blender creates automatically. They are good to use as a foundation to start with.

Go to Shading buttons (F5) > texture buttons (F6)

And note that:

- The Preview Window is black → default texture is ‘none’
- There are 10 texture channels (each can have a texture applied)*

*Each channel has its own individual mapping. Textures are executed the one after the other. To delete one of the Textures in the channels press the X next to texture name.

Now we will go add a new texture in the first channel (by default selected). Go to the list arrows under **Texture Type** and select one from the list. If you select wood for example, a new tab appears with the **textures properties** for this type of texture.
There are the following Texture types to choose from the list:

i. **Distorted Noise**: Use for very rough, complex surfaces
ii. **Voronoi**: very versatile texture does not have noise basis. Use it to create scales, veins, textured metal, and mosaics.
iii. **Musgrave**: for organic materials: rock cracks, clouds e.t.c. Note that it takes a bit longer to render
iv. **Noise**: the simplest texture type. Perfect for white noise (e.g. TV screen) but it has no control points so it looks different every time you render.
v. **Blend**: blends two textures together and creates a gradient effect.

**Note**: The **Colours tab** (next to texture tab) can be used to determine the colours you wish to use in your procedural texture. Use the panel to add or delete a colour, set the RGB values, the Alpha, brightness and contrast.

vi. **Magic**: is good to create a knit texture for cloths and blankets
vii. **Wood**: could be used for wood but better for any kind of stripes texture.

viii. **Stucci**: is quite good for industrial materials like stucco, concrete etc.
ix. **Marble**: can create polished marble but mostly fire and small ripples in ponds and lakes.

x. **Clouds**: good general purpose texture (use it mostly for smoke and clouds).
xi. **EnvMap**: use it to fake reflection on the obj. Remember to activate rendering settings when using it (**Refi** button in the mapto panel+ **EnvMap** button in the Render panel)

Select a Texture and tweak it to make it look as you want and then go to the Material Button Panel again.

**Mapping**: is the process of relating a texture to a material

There, on the far end tab you can see the properties of the texture you just applied. Use **Map Input** to define how the texture will be mapped on the mesh and **Map To**, to determine how it will look and change colours.
Map Input Panel:

There are various ways to map a texture on a mesh. The main of them are explained below:

**Glob**: good for faking shadows since the texture stays in the same place as the object moves.

**Object**: use object’s location as a means to placing a texture to the obj.

**UV**: the most precise way of mapping textures (should go through unwrapping before).

**Orco**: is the default and works great for most cases especially with procedural textures.

**Win**: Uses camera’s coordinates works great for animation so as the texture to stay in place.

**Nor**: texture reacts to the viewing angle of the camera.

**Refi**: use it with the env map to get reflective textures

You can also use the **texture projection** (Flat, Cube, Sphere, Tube) controls to determine how the texture is applied on the mesh. Works for all except UVs!

Map To Panel:

Through this panel we can control how the texture affects the material and its appearance.
In this menu we mainly control the colours of the mesh and the way they mix between them to create the final texture.

**Image Textures**

To add an image texture, go to the Texture menu again and from the list that you previously choose the procedural texture, now choose *Image*. Go to the far end *Load button*, hit it and browse to find an image to use.

Go back to the Material buttons to determine how it will look (*MapInput* + *MapTo* tabs) and render.

You will see the image on the mesh!

This is a simple way to map an image Texture on a mesh. Most times this works fine but in cases you are using more detailed modelling we will to actually unwrap the mesh and apply the texture on it to make sure it looks the way you want (no deformation, no stretching and so on).
**Unwrapping**

Unwrapping is a more precise technique of mapping a texture on an object and helps you use other features as well, like Texture paint and Baking. In order to get the UV coordinates for a mesh we must unwrap it using the UV/Image Editor.

First of all we need to create the proper workspace to project our mesh upon. Split the screen in two and change the second one to the UV/Image Editor.

Select the object (here the cube) > Edit mode (tab) > A > U

This will bring up the unwrap menu. The Unwrap Calculations we mostly use are either the **Unwrap** that performs the operation automatically in the ‘best possible way’ (use this for simple geometry) or the **Unwrap (smart projections)** that attempts to flatten the mesh and performs a mark seams operation automatically.

Hit Unwrap and see how the Cube’s faces unwrap in the image editor. The one is on top of the other, which is not very useful if you want to project different parts of the image in different areas of the mesh.
To fix this we will use the **Mark Seams** techniques to indicate to Blender how to Unwrap the Cube with detail. This way we will attempt to flatten the 3D shape to a 2D image using the seams as markers.

So let’s start over. Add a new cube to the scene and select it > Edit mode (tab).

Now we will mark the seams. Which ones we select will depend on how we want to unwrap the mesh. Select them with the Edge select tool > **ctrl+E** > mark seam> then hit **A** to select everything again>U> unwrap.

So you can see we now unwrapped the mesh as a 2D image projection of all the faces of the Cube:

*you can use **Ctrl + E** > clear seams to deselect the seams you previously marked.

**the unwrap object on the UV/Image Editor can still be manipulated as all other meshes in Blender, by its vertices, edges and, faces.

**Texture Paint**

Continue from the last step above...

Having the mesh unwrapped (obj in 3D view selected and in edit mode)> UV/Image editor> **New> Image**

And in 3D view > Draw type menu> **textured** (to see differences in textures while you paint)

Back to the UV/Image editor>**Image>texture paint>C** (to bring up the painting tools palette)
Set up the brush settings from the Image Paint panel and draw over the Unwrap.

After done painting you may want to do save the image as a Texture.

First go to Image > Texture Paint again to deactivate it. Then, save the texture you painted: UV/Image Editor>Image>Save as.

More Unwrapping

We will now see how you can control your unwrapped meshes using nodes.

Add a monkey in the 3D view and unwrap it (smart projections). In the UV/Image Editor go to Image > New and then Image > Open and open a new image.
Now you can use the select tools on the UV/Image Editor to select the nodes around (parts of the unwrapped mesh and move them over the image part you want. This way you can have the maximum control over how your image textures will look when you render.