
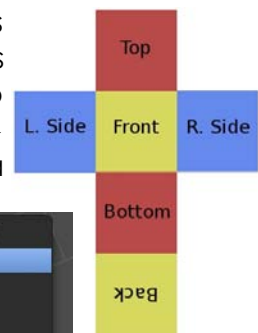


## Chapter 22- Textures in the Game Engine

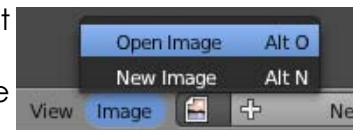
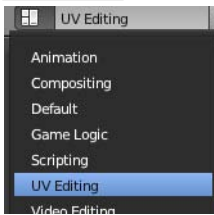
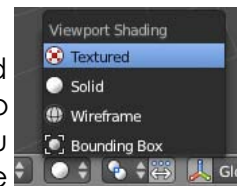
Since games need to be able to process operations as fast as possible, traditional rendering techniques (*specularity, ray tracing reflections and refractions*) cannot typically be processed fast enough for a game. For this reason, textures need to be mapped differently. There are also times when you may want to use mapped textures in an actual render. Blender does this through traditional *UV Texture Mapping* and a new system called *GLSL Shading*. There is a lot that can be done through both of these methods “beyond the basics” that will be discussed here. For more details, check out the Blender wiki.

### UV Texture Mapping

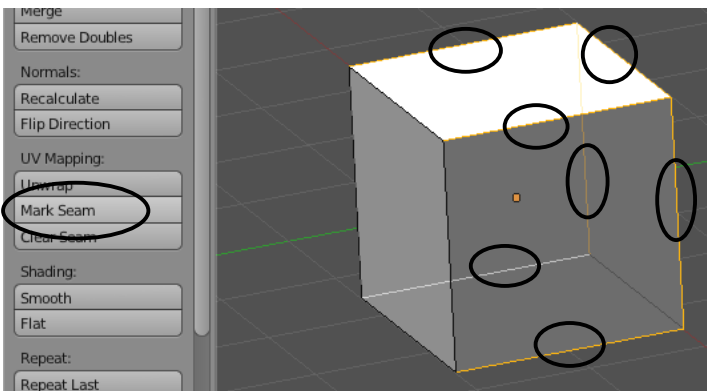
Think of *UV Mapping* like taking a box and cutting it to lay flat. The texture needs to match each side of the box. It is difficult to do that with traditional materials and textures. Let's say you want to model a dinosaur. The texture changes on various parts of his body and need to be mapped correctly. This is where UV Mapping come into play. For this example, I am going to map the following texture I made in GIMP on a basic cube:  This is just a jpeg image that would be impossible to map as a standard material/texture.



To begin, start with a basic scene with a cube and change your viewport shading type from *Solid* to *Textured*. This is the shading used during game play. You will notice that, by default, textures are effected by the lighting so add some lights to illuminate your scene better and switch to the “*UV Editing*” window layout. This will give you one 3D viewport and one UV Editor viewport. At the bottom of the UV Editor viewport, hit the *Image-Open Image* menu option and find the texture you wish to use.



Now, enter Edit Mode for the cube and switch to selecting *Vertices* to *Faces* since this is a face applying process. You can select individual faces and put UV textures on that way, but let's “Unwrap” the cube to match our texture. This can be done for any mesh, but we need to mark the seams where we want a split to occur. If we look at the picture, we can see where seams should go. In order to mark seams, we need to switch from *Face* select to *Edge* select.



Select the following edges (*Shift-RMB*) and click “*Mark Seam*” in the *UV Mapping* section in the *Tool Shelf*. These will be the unfold edges. It should match the box layout.