



Unreal Engine 3 Series Advanced Materials

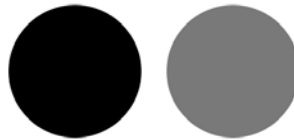
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The following tutorial will cover an in-depth overview of more advanced applications for materials inside the Unreal 3 Engine. The tutorial will cover scripted material events both with and without Kismet, as well as animated transitions that can be triggered in real-time. It is advised that new users check out the tutorial regarding the Material Editor basics before getting into this guide.

Masking Materials

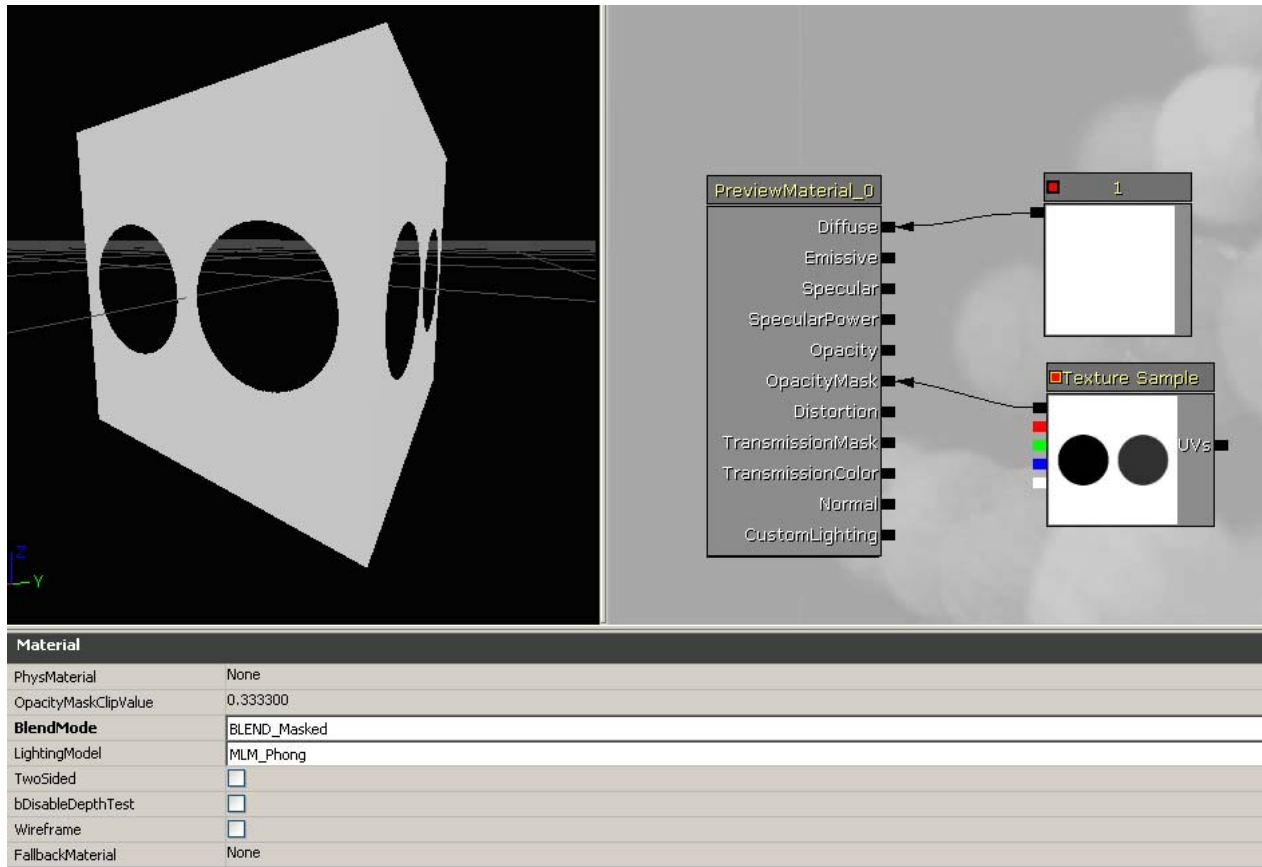
Setup

This process focuses primarily on understanding the Opacity Mask input of your material network. The mask will essentially make any designated area of your material transparent, just like masking in other software packages such as Photoshop. Below is a sample mask of two circles of different values of grey that will mask equally when applied in the Material Editor. This same image will be used later to show how different values of grey are treated differently amongst different nodes.



Applications

Obviously, transparency can be anywhere in your level, on anything from environmental objects to characters. This is an effective and efficient way to take an area out of an object or to simulate animation as if something is deteriorating. It is important to note, however, that while you can mask an area out and see the other side using double-sided faces; this begins to add up on system memory and can cause performance issues. Refrain from utilizing double-sided faces wherever possible. See below for an image of the node network and the resulting material.



Our mask texture applied into the Opacity Mask input. Notice that the BlendMode of this material is set to **BLEND_Masked**. This is essential to see the masking effect.

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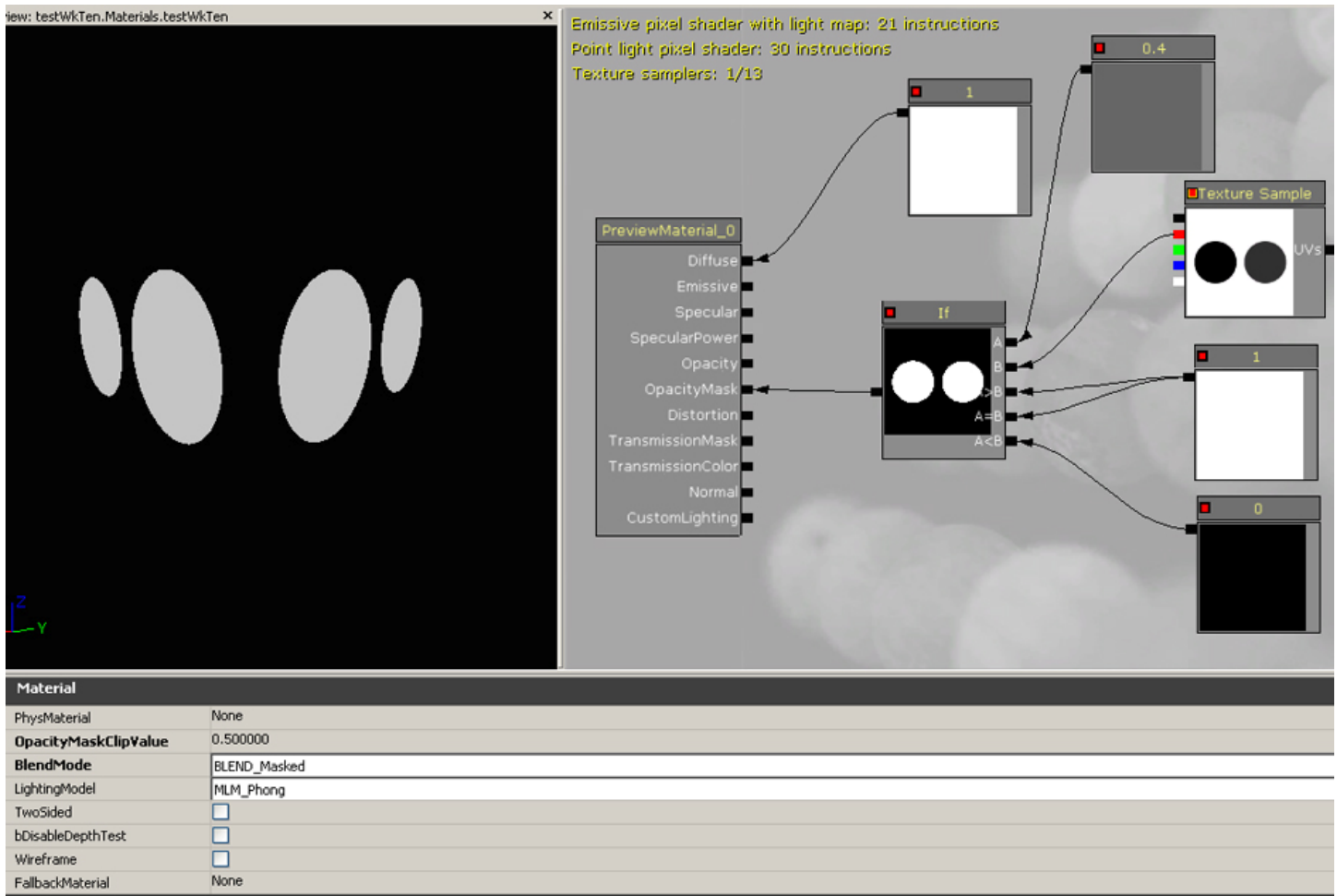
If Statements

Why If Statements for Materials?

Just as they are in programming, if statements act as conditionals within the Material Editor and can instruct a change in a material IF some set of parameters has been met or not met. This is a valuable tool when attempting to animate material effects based on particular conditions.

Setup

The available inputs are A, B, A>B, A=B, and A<B. The A input and the B input will dictate the results from the others.



This type of set up will allow scripting to occur on our A and B inputs later, which can effectively change the result of any of the other parameters on the If node, triggering a change in our material.

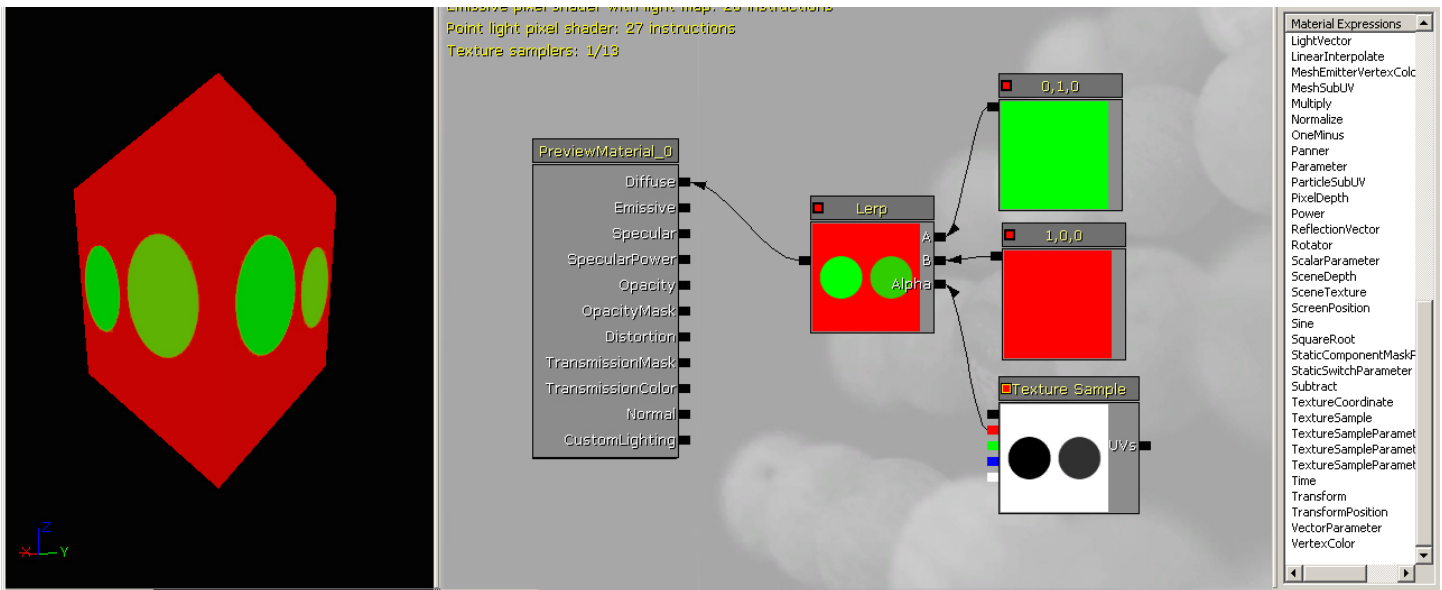
LERP (Linear Interpolation) Nodes

What the LERP Does

Simply put, the LERP or Linear Interpolation node allows for the linear combinations of two constants or textures. The user is even able to control the intensity of the combination between the two inputs (A and B, just like in the If node) with the addition of the Alpha channel (which doesn't actually work like Alpha, it just controls the intensity of the mix through black and white values).

Setup

As mentioned above, the Lerp node features an A input, a B input, and an Alpha input which is used for controlling the intensity of the color mix. The inputs are fairly straight forward for such a powerful node and like other nodes, these can be changed through scripts to animate bias or intensity from the A input to the B input or vice-versa. See the node network below for how the Lerp may work.



Notice the different values of green because of the difference in the values of grey from our texture sample. This is the first node in the tutorial to utilize the different values of grey differently.

Applications

Now, we've multiplied and added textures before in our Material Editor Introduction and Apple Shader tutorials, but the Lerp node has slightly more flexibility with the introduction of the Alpha input that can control these two passes more readily. You may be able to obtain similar effects with both, but the Lerp node will allow this mixing to come much more easily.

Creating Material Transitions