



# Worrying Too Much About Materials? Start With A Clean Slate!

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**AV2659**

## Learning Objectives

At the end of this class, you will be able to:

- Know the difference between the Compact Material Editor and the Slate Material Editor.
- Successfully Navigate the Slate Material Editor in 3ds Max and/or 3ds Max Design.
- Explain wiring of node based material hierarchies.
- Easily organize materials in the Slate Material Editor

## About the Speaker

*Marcus Kim is a Business Consultant for Autodesk Consulting with over 15 years of industry experience and has spoken at AU in 2011 and 2010. Prior to Autodesk, he has served as the BIM Manager at the Chicago office of Skidmore Owings and Merrill on many early BIM projects and has held lead roles at other Chicago AEC firms for competitions, design visualization, design architecture, and technical architecture. At Autodesk, Mr. Kim provides enterprise-level BIM consulting BIM and design visualization training, and has mentored his customers throughout every critical phase of a project. Outside of Autodesk, Mr. Kim volunteers his time to chair the Chicago Chapter of the Computer Graphics Society, a non-profit organization, whose mission is to mentor professionals and students in the latest design visualization techniques both 2D and 3D. Mr. Kim has a BA in Architecture from the University of Illinois Chicago, and an AAS in Digital Media from the American Academy of Art in Chicago.*

## 1 General Overview: Slate Material Editor

Managing and developing materials is one of the major challenges when utilizing visualization tools like 3DS Max and 3DS Max Design. Regardless of a material complexity or simplicity, if the material is not created correctly, the final output (renderings or animations) can look lack luster and sub-par. The creation of materials is therefore an important skill to master in order to differentiate a 3D artists work from professional quality to that of a hobbyist.

Prior to the 2011 release of 3DS Max, the only material editor was the Compact Material Editor, tried and true, but there was a fundamental flaw with its design. It was compact, menus hidden within menus, features hidden with further sub-menus, and any development of materials from a user who was not intimately familiar with the material editor was a monumental task. With the introduction of the Slate Material Editor, Autodesk reworked the material editor to have a more graphical representation, and allowed 3D artists to logically approach the creation of materials, more easily look at materials developed by other 3D artists and easily be able to understand them.

Though this class is an examination of material principles, with a specific focus on the Slate Material Editor, it is assumed that the audience has some general understanding of material concepts.

### 1.1 General Terms and Definitions

Throughout this document, and the presentation some common terms are used. They are not interchangeable, however to many novices they are used inappropriately.

**Materials:** This is the generic term that is often used when describing visual material elements applied to 3D objects. Let's just consider these as nothing more than master containers that stores all the information pertaining to the material, its color, its texture, its opacity, its reflectivity, its Hue Saturation Value, and etc.

**Maps:** Often incorrectly used interchangeable with the term Materials. This is not the case! The term map simply refers to an image file that is either user created or procedurally created. The image files are then assigned / referenced to a material in order to give graphic instruction to the material.

In essence the **Material** describes an overall concept. A Material can be created without Maps. A Map is assigned to Materials. So let's start using the terms correctly.

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## 2 Knowing the Difference Between Material Editors

So you want to know more about Material Editors in 3ds Max / 3ds Max Design (will just be referring to both products as Max from here on), and have managed to stick around for more than the introduction. Well let's start examining the differences. As you know Max offers two Material Editors:

- Compact Material Editor
- Slate Material Editor

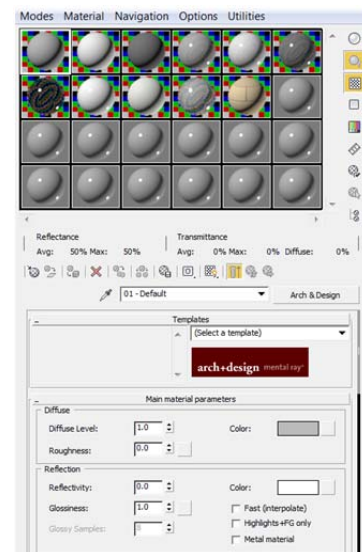
**Presenter Comments:** I want to point out that both Material Editors are capable of the same end result, a developed Material that accounts for every detail quality of the Material. After this class you decide which one you prefer. Ultimately it comes down to what you feel best works in your workflow, but I want to add since I've learned the Slate Material Editor, I very rarely refer to the Compact Material Editor.

### 2.1 Compact Material Editor

The Compact Material Editor is the legacy Material Editor and was the only option available in Max prior to the 2011 release. With the exception of some of available menus, the graphic look of the editor has not changed much.

If you are familiar with the editor, you have the swatch samples, and a whole bunch of buttons, some which navigate you to a submenu. Once you go to a submenu, you're uncertain how to get out.

Since this presentation is more about Slate, I won't go into the gritty details of this editor



### 2.2 Slate Material Editor

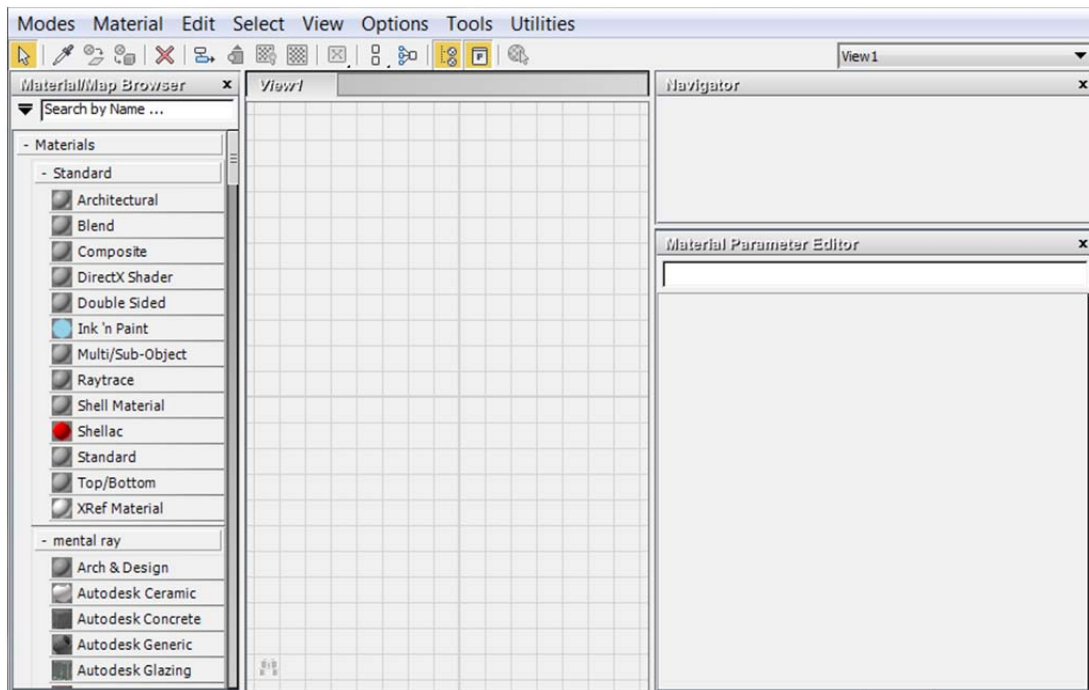
When you got the latest version of Max and you ran the application for the first time, I'm sure like me one of the first things you did was start randomly pushing buttons, one of them obviously for the Material Editor, which looks like this: (Note that there is a flyout menu to this icon, by default the one that is circled below is the default setting)



Or pushed the hotkey “M”

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And when the Material Editor opened, it look like this:

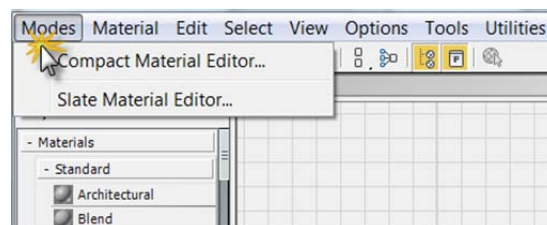


You went, “What is this?” **Congratulations you are in the Slate Material Editor.**

Not to worry if you prefer the Compact Material Editor, you can either go to the flyout button and reselect the Material Editor:



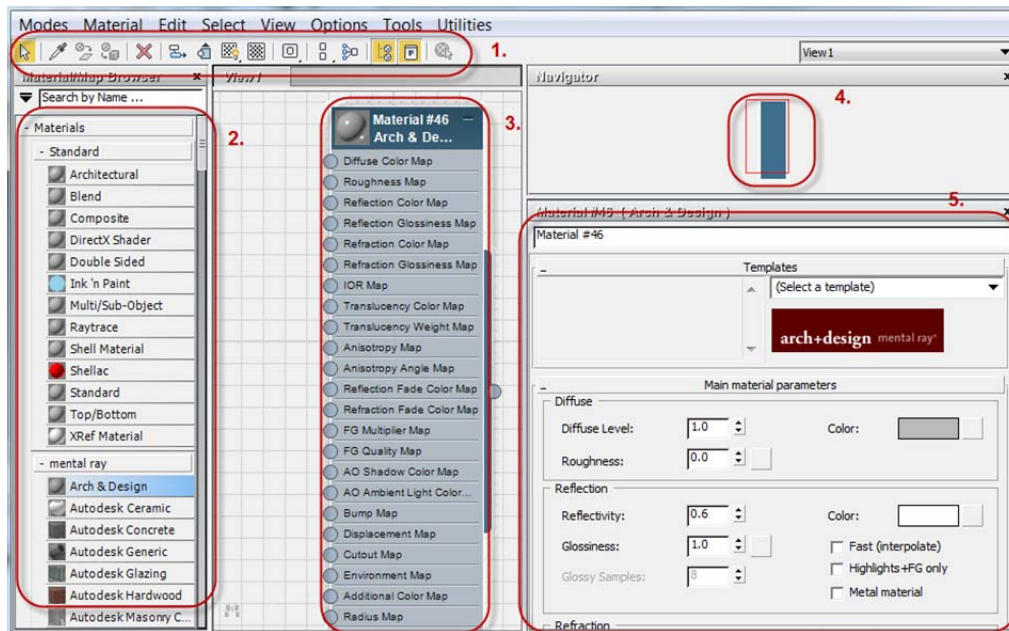
Or from the Slate Material Editor you can go to **Modes** → and toggle over to the Compact Material Editor.



So beyond the user interface what are the differences?

## 2.2.1 What's Up with the Slate Material Editor

Beyond the obvious look of the graphic Material Editor, the interface puts all of the tools that you need to generate the materials readily available.



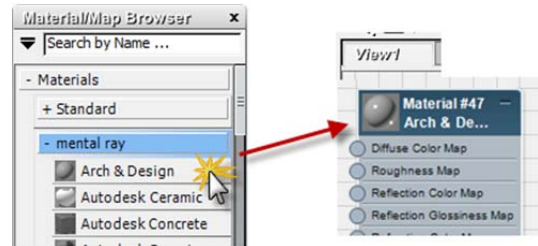
1. Menu Bar (Similar in format to what's available in the Compact Material Editor)
2. Material/Map Browser (Instead of hunting for the sub-menu, it's already available in Slate)
3. Material Node Element (When you start a material from the Material/Map Browser a graphic node instance of it is brought into the View)
4. Navigator (This represents a thumbnail of your view tab, it allows you to see where you are in the view.)
5. Parameter Editor (Similar to the Compact Material Editor you see the relevant parameter definitions that are associated with the Material)

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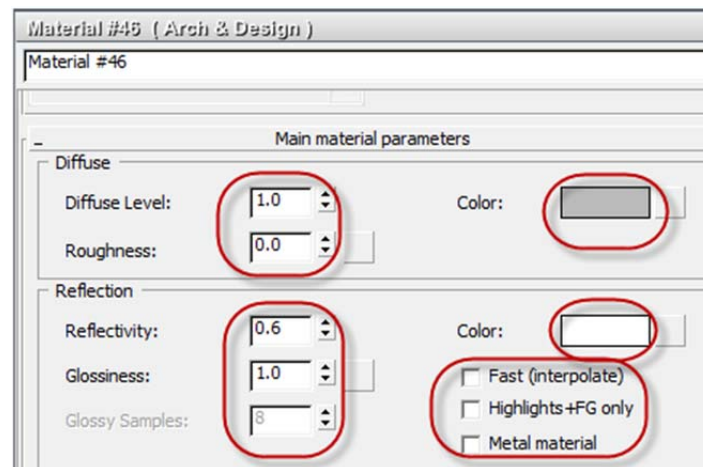
### 2.2.2 The ABC of Creating a New Material in Slate

As with the Compact Material Editor you will always start a brand new material from the Material/Map Browser.

- In the Material/Map Browser Double Click on any of the starting templates. You will see a Material Node element appear in the View Tab.



- You can make any adjustments to the parameters in the Parameter Editor such as Diffuse and Reflection Settings.



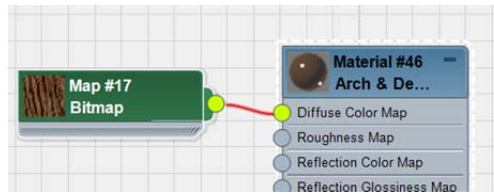
- Any areas in the Parameter Editor that has a box icon is representative of an area where you can assign a map.



If you click on the Box, the Material/Map Browser will appear and you can specify a Map.

- In the following example the **Bitmap** was selected as the map definition. Though you are thinking to yourself, "Well I do that in the Compact Material Editor", the critical difference is represented in the view tab. A Bitmap node element will appear next the main material node and you will see a **red** wire connecting from the output of the Bitmap, in this case to the input node of the diffuse Channel.

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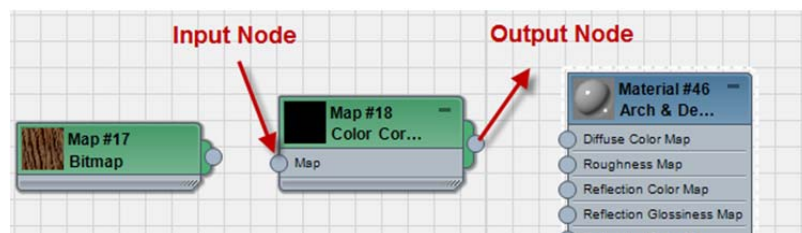


(In the above example we clearly see a relationship between the bitmap and the main material)

- Perhaps you want to put a color correction channel for the bitmap. Where as in the Compact Material Editor you would have to go to another sub-menu and dig for color correction channel, in Slate it is a much easier process.
  - Select the **red** wire by clicking on it. When it highlights hit the delete key! You will see the wire disappear. In this case the Bitmap is now orphaned but still available for use in Slate.



- To insert a color correction channel, go to the Material/Map Browser, Under **Maps**, double click “**Color Correction**”. You will see the **Color Correction** node element appear in the view. (In this case this the Color Correction Map is nothing more than a procedural map designed to alter colors of bitmaps.)

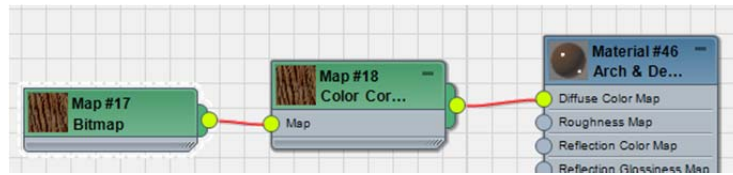


(Note: For all node elements, by default the node on the left is considered inputs, and the node on the right is considered outputs)

- To associate the maps back to the source Material node element, re-wire the input/output connections. Simply click and drag from the node of one and associate it to the node of another. (User note: Always associate an output node to and input node. You cannot associate an “input node to input node” nor “output node to output node”)



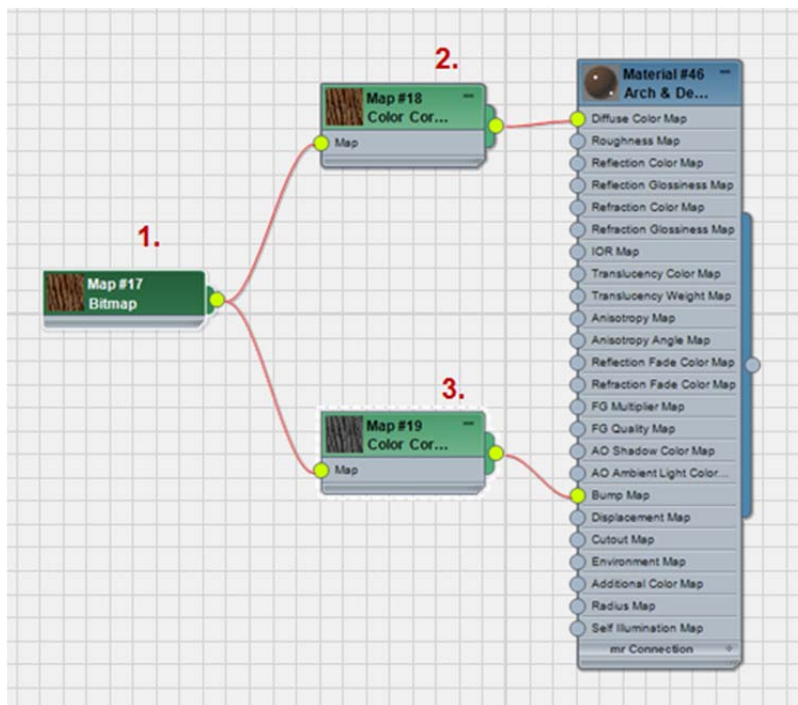
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Now that you have the general concept, you can begin leveraging the node methodology for greater variations.

### 2.2.3 Maximizing Node Hierarchy

The output of any node can be associated to multiple inputs. The biggest advantage to this is that you can use the same source map to serve multiple functions for the material.



1. Primary Bitmap representing a wood panel. It outputs to two color correction maps.
2. This color correction map augments the primary Bitmap by changing the Hue to a yellow shift, the output of which is connected the Diffuse Channel.
3. This color correction map augments the primary Bitmap by de-saturating the color to a pure grey scale, the output of which is connected to the Bump Map.



The possibilities to this workflow is endless, but the biggest advantage to this workflow, at a quick glance you can easily understand the logic behind how the material is designed.

### 3 Organizing Your Materials

Organizing your materials in the Compact Material Editor was always a challenge. You were always limited by the number of sample slots you can have available at any one time. Often causing you to delete the sample slot to make room for the development of new materials. If you wanted an older material back you would have to sample the material back into a free sample slot.

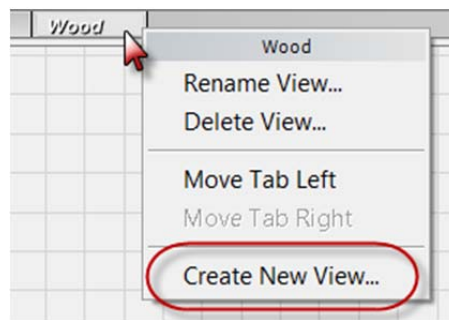
In Slate, the materials are housed in the View Tab. You can create multiple view tabs, as many as you need. You can rename the view tabs in order to categorize your materials.



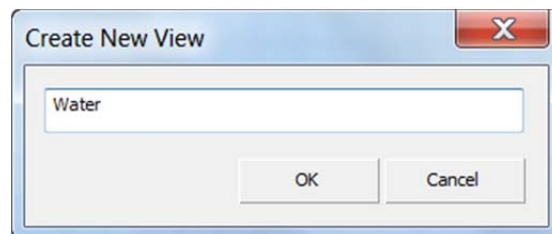
In the above example, three view tabs were created to categorize three kinds of Materials being developed.

You can create additional View Tabs by the following:

- Right Click any view tab → Create New View

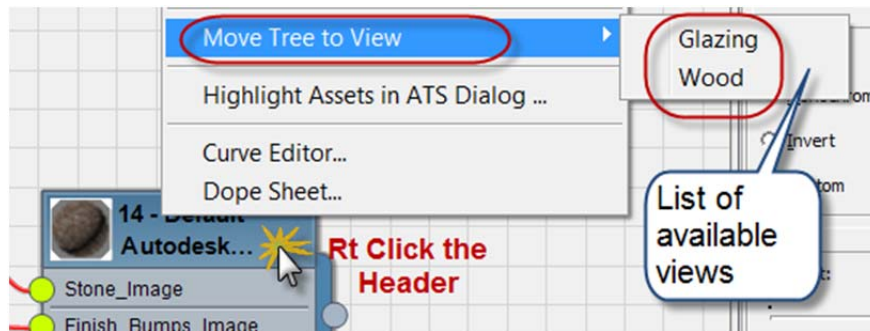


- When the “Create New View Window” appears, specify desired name for the view.



By default, when creating materials, it will place the node elements on the current active view. If you create a material and realize that you have placed in the wrong view you can do the following:

- Right click the header of the Material → Move Tree to View → Select Available View



This easy organization method comes in handy when trying to group materials together.

## **4 Closing Comments**

Hopefully this class gave you a very good crash course on the Slate Material Editor, and you no longer fear the Material Editor. This class only touched on the tip of the iceberg, the Slate Material Editor is capable of so much more. It's up to you to now explore all of its capabilities.

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