



# AIRFIELD PLATES FOR BEGINNERS PART 2 ADVANCED TECHNIQUES

## CONTENTS

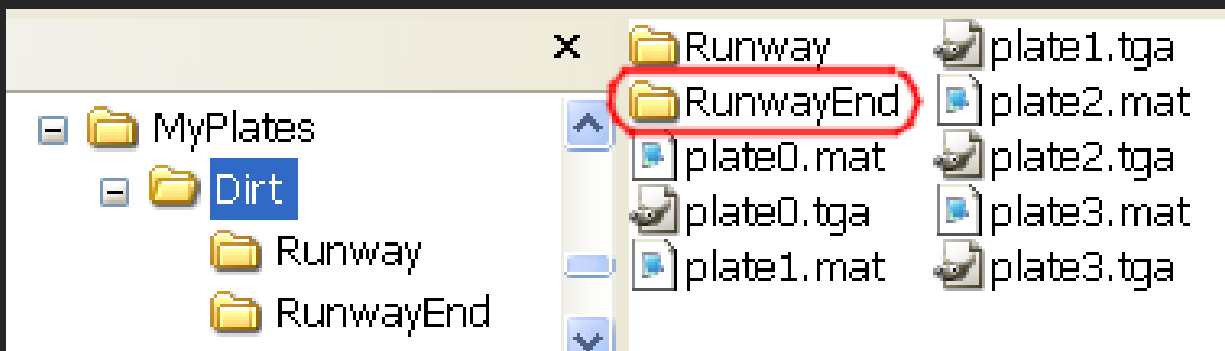
- 2 Unwrap UVW
- 10 MAT files
- 13 Plate edges
- 16 Repeating textures
- 18 Two textures on one plate

# UNWRAP UVW



I want to show you how to make the End for the Runway using a different Material Mapping technique.

First you need to make a copy of the Runway folder (including the MSH & SIM files) & rename it **RunwayEnd**



Then open the **static.ini** file.

Copy the Runway Plate text & paste it underneath. Change all the **Runway** to **RunwayEnd**

```
[buildings.Plate$MyPlates_Dirt_Runway]
```

```
Title      Dirt_Runway
```

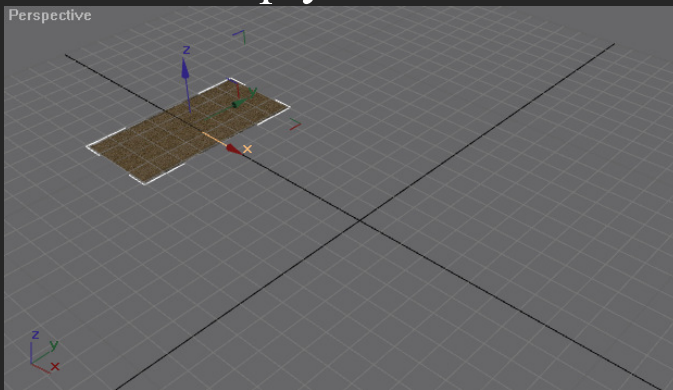
```
Mesh       3do/airfield/MyPlates/Dirt/Runway/mono.sim
```

```
[buildings.Plate$MyPlates_Dirt_RunwayEnd]
```

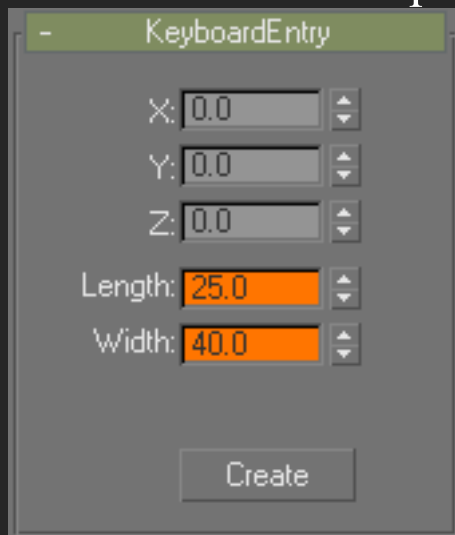
```
Title      Dirt_RunwayEnd
```

```
Mesh       3do/airfield/MyPlates/Dirt/RunwayEnd/mono.sim
```

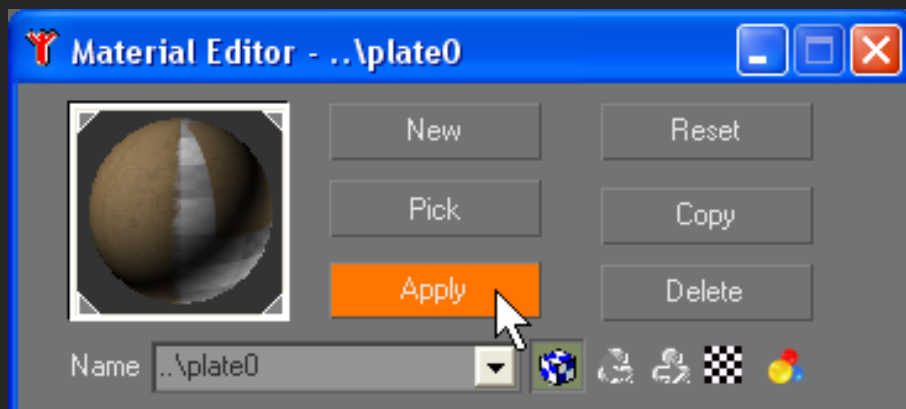
Run Gmax & open the **Dirt Runway** scene. Select the Runway plate. Click on the red arrow & move the plate out of the way. Click an empty area of the screen to un-select the plate.

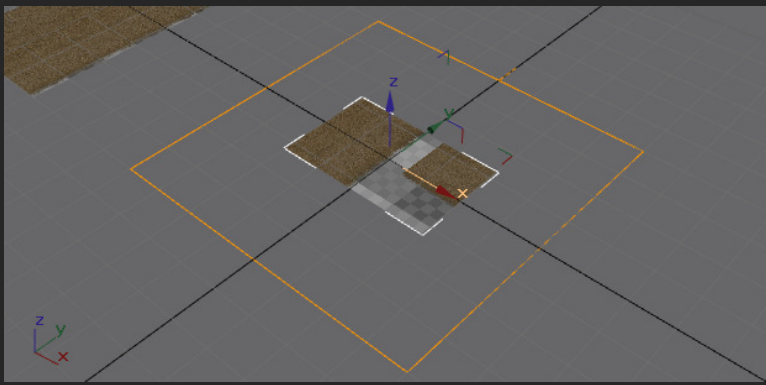


Then create a new plate with Length **25m** & Width **40m**

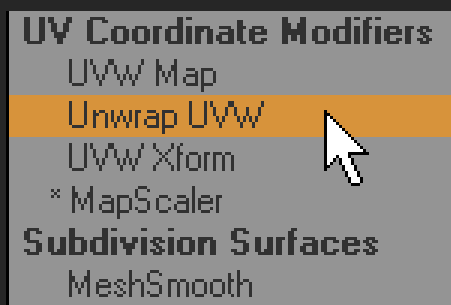
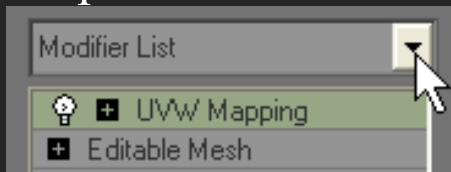


Convert it to an **Editable Mesh** & add a **UVW Map**. Make the map the same size as you did for the Runway (80m x 80m). Open the **Material Editor**. There's no need to go through the texture selection process again, just press the **Apply** button.





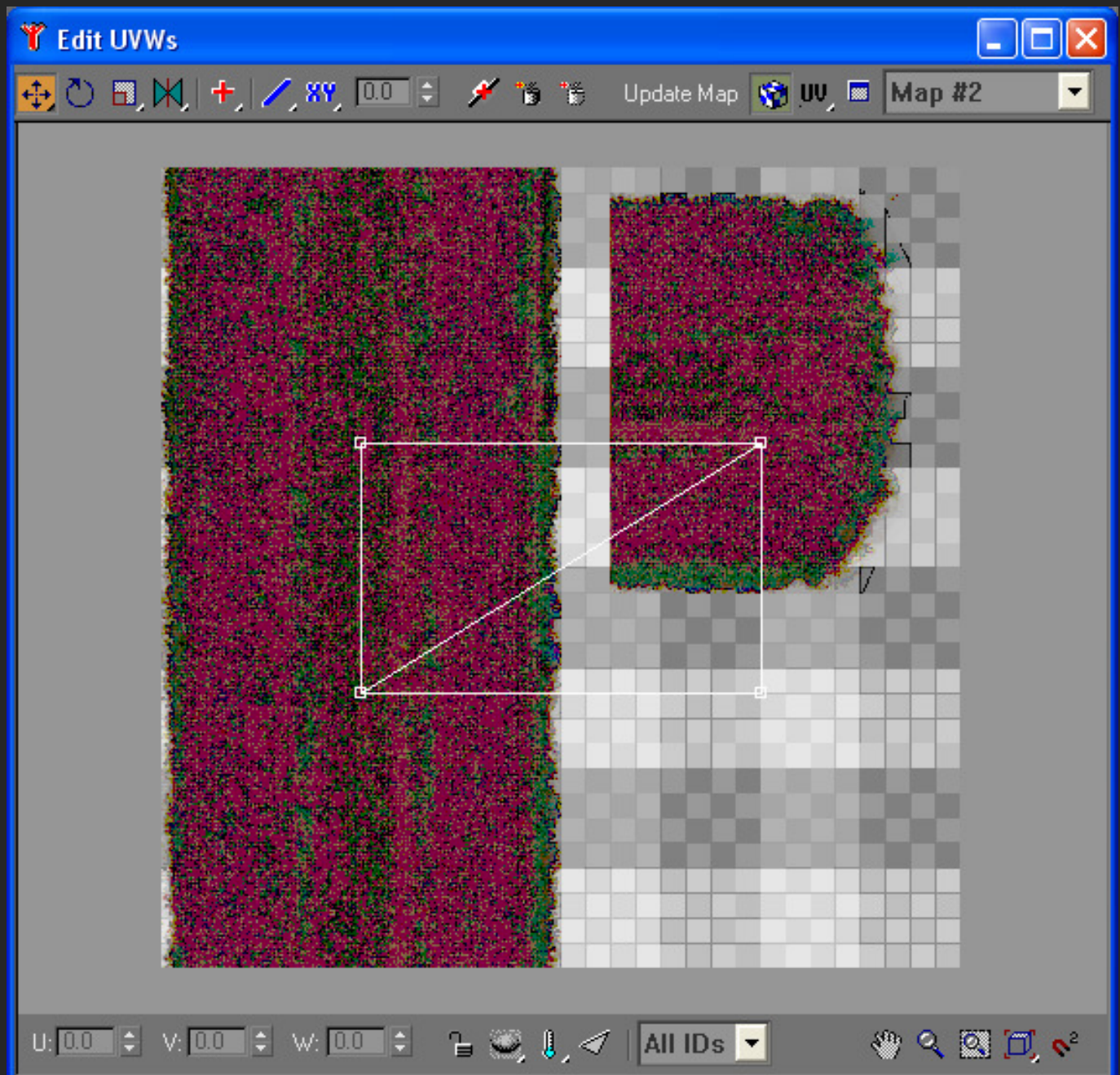
Now open the **Modifier List** again & select **Unwrap UVW** from the drop down menu.



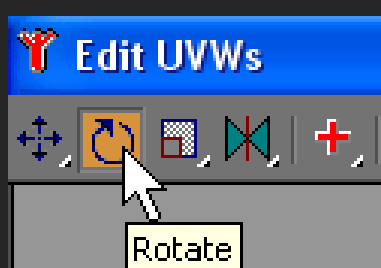
In the Parameters section that opens, press the **Edit...** button



The **Edit UVWs** window appears & in the centre you will see the outline of the plate.

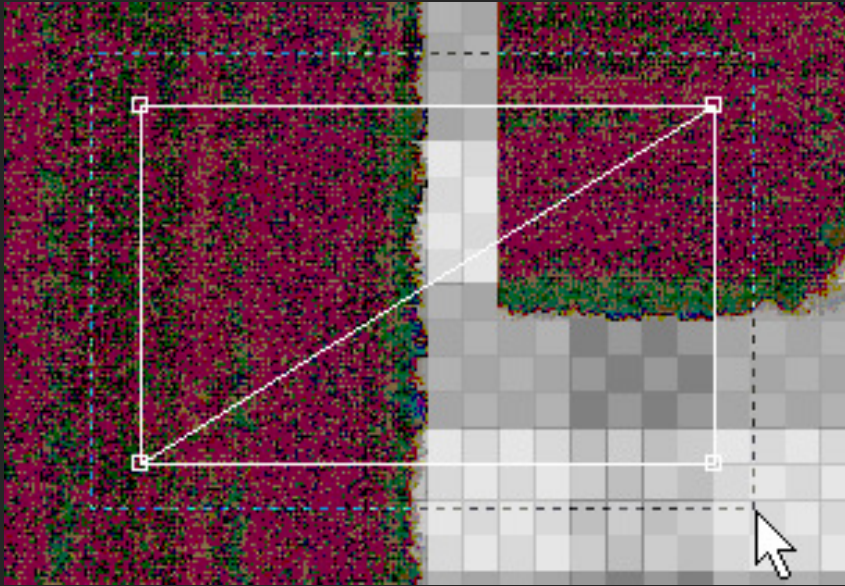


It needs to be rotated 90 degrees & moved up & to the right to fit the texture. To rotate it, first press the **Rotate** button in the upper, left corner.

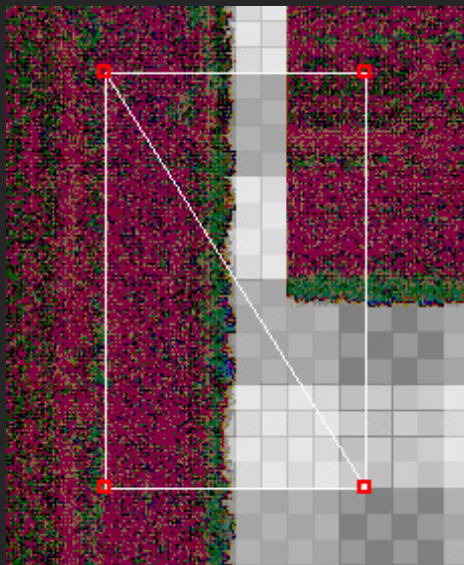




Place the pointer at the top left of the plate. Then **Click&Drag** to the bottom right to select it all.



The corners (vertices) will turn red. Place the pointer over the lower left vertex. Then click & push your mouse up to rotate the plate.



Press the Maximise button to make the Edit window full size.



Then press the **Move** button.



Click one of the vertices & move the plate into position (use the zoom button or mouse wheel to get closer).  
Allow the texture to overlap the edge of the plate on the left hand side by 64 pixels (the grey background squares are 32x32 pixels).

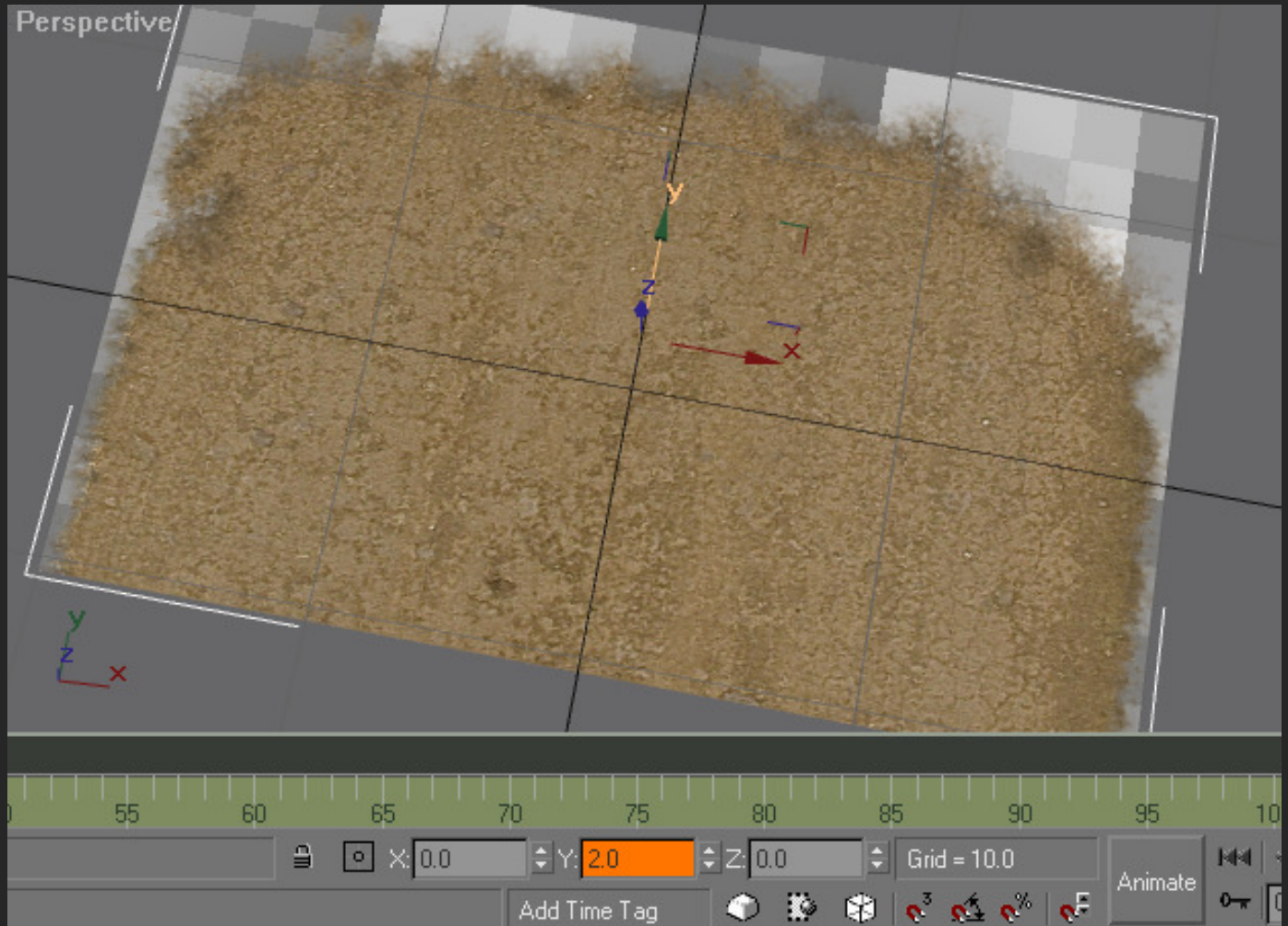


For greater accuracy, press the **Pixel Snap** button (bottom right corner).





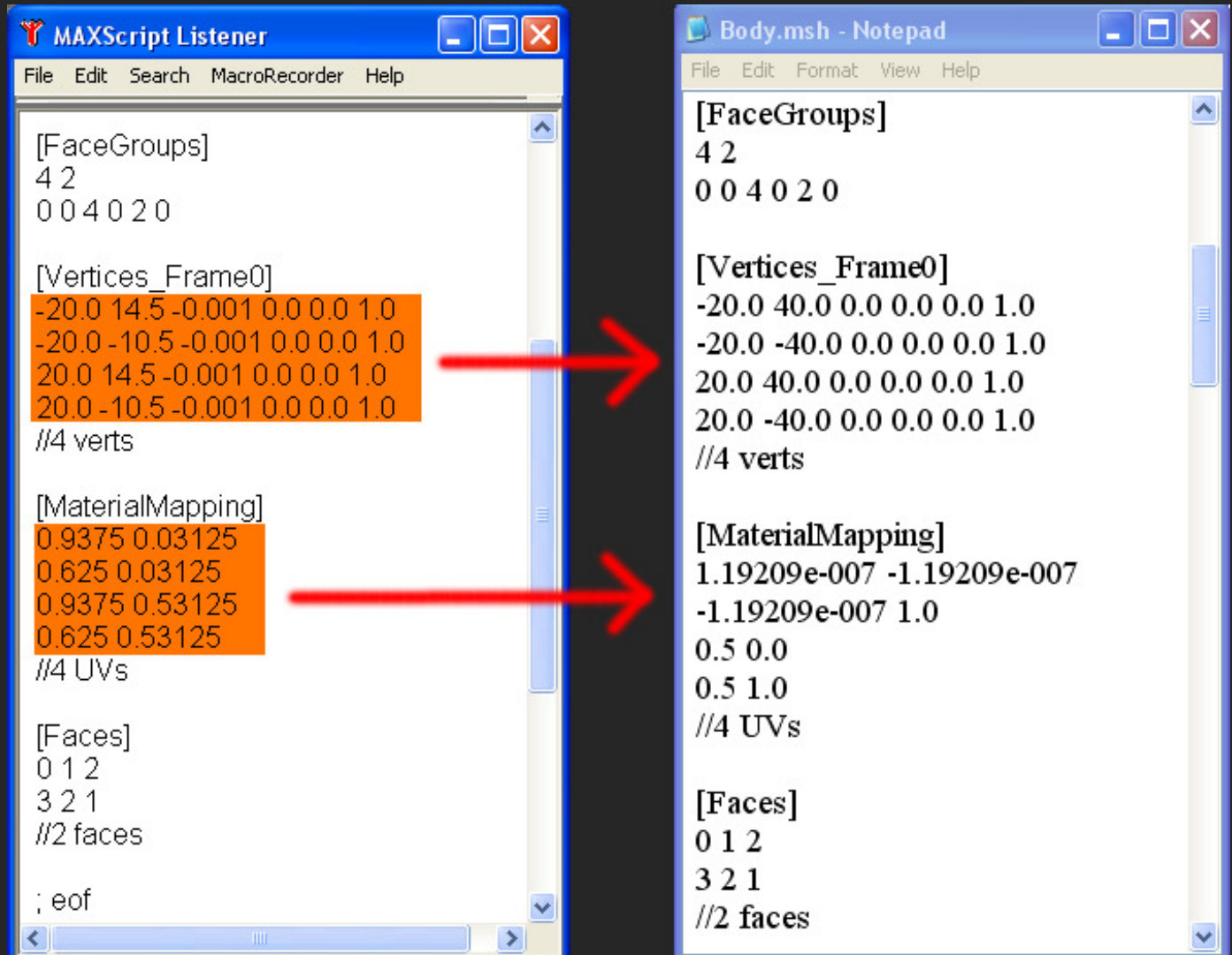
Now close the Edit window & move the plate about **2m** along the **Y axis** so that the two thin black lines cross at the centre of the texture instead of the centre of the plate. This is because that's where the grab point is & it's always easier to find if it's centred on the texture instead of the plate.





Now **Export** it to the **Listener**.

Then go to the **RunwayEnd** folder & open the **Body.msh** file.  
Copy the **Vertices** from the Listener & replace the Vertices of all 4 LODs in the Body.msh. Do the same with the **MaterialMapping**.



Since the **FaceGroups** & **Faces** are the same, there is no need to copy them.

# MAT FILES

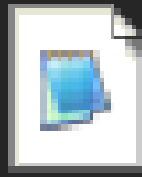


plate0.mat

MAT File

1 KB

These files tell the game which texture to use for each LOD & also control how the texture looks, such as how transparent, or how shiny it is. You need a MAT file for each LOD.

The game knows what MAT file to use for each LOD because it is written in the [Body.msh](#) file as shown below.

[Materials]

../plate0

The two dots & slash are to tell the game to look outside the folder for the MAT file. If you removed the dots & slash, you would have to put the MAT & texture files inside the same folder as the [Body.msh](#) file. If you want to put the MAT files in the next folder up then write [../..](#) & so on.

You can use any name for the MAT file, it doesn't have to be called plate0 but if you do use a different name make sure you look through all the MAT files for where it says plate0 & change it.

# VISIBILITY DISTANCE

The maximum distance at which the last LOD can be seen is set in the MAT file by the text below -

**VisibleDistanceFar 20000.0**

The units are in metres & can be increased if you wish your plates to be visible at a greater distance. You would also need to increase the value of the last LOD.

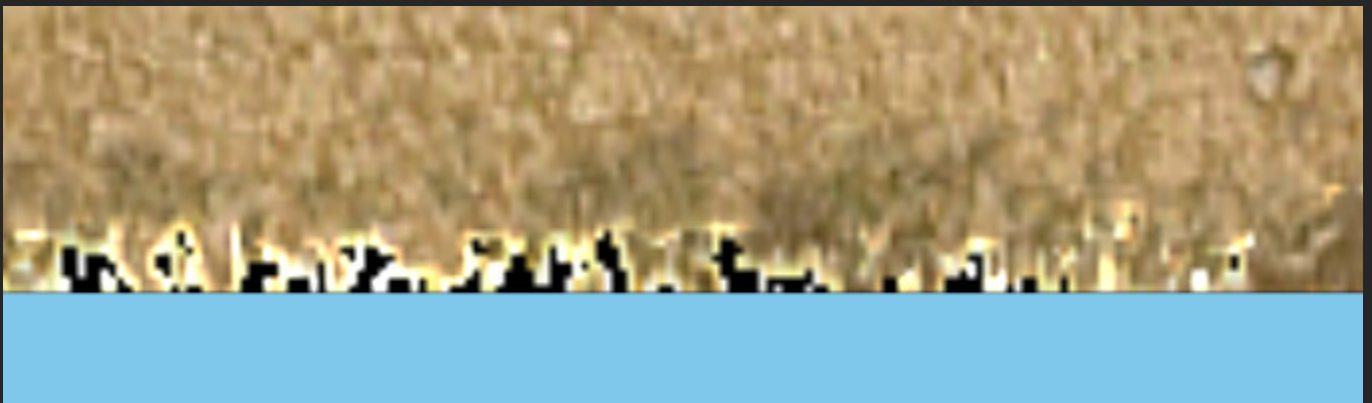
## tfBlend 1

This controls whether the texture can have transparent areas. If you changed the number from 1 to 0 then the whole texture would be completely opaque.

tfBlend 1



tfBlend 0

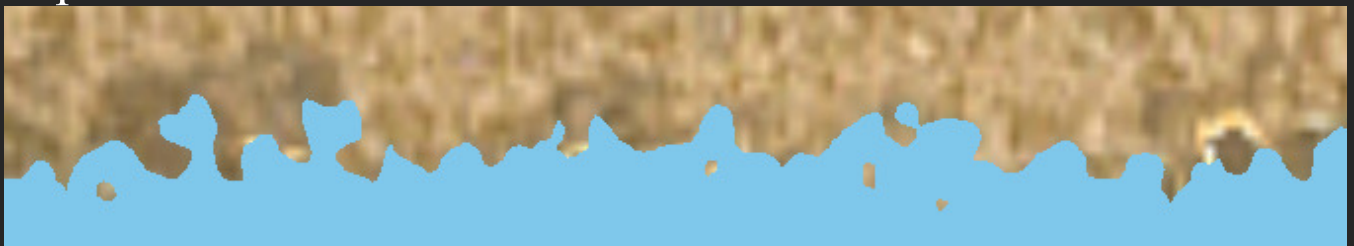


If you want to control exactly how transparent the texture appears then you need to have the values like this -

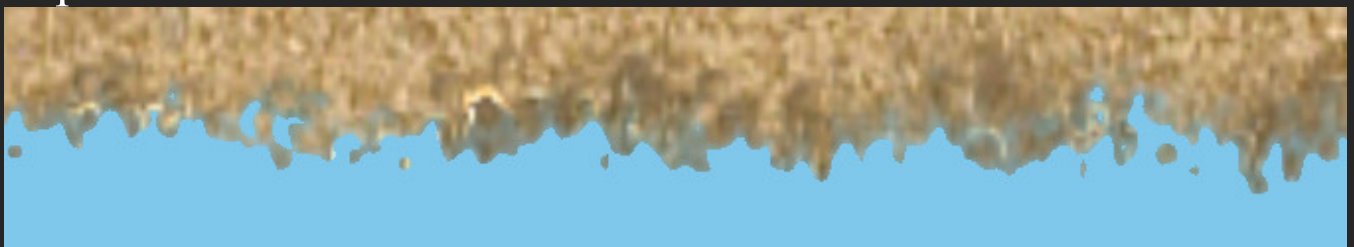
AlphaTestVal 0.5  
tfBlend 1  
tfTestA 1

The AlphaTestVal number can be anywhere between 0.1 and 0.9

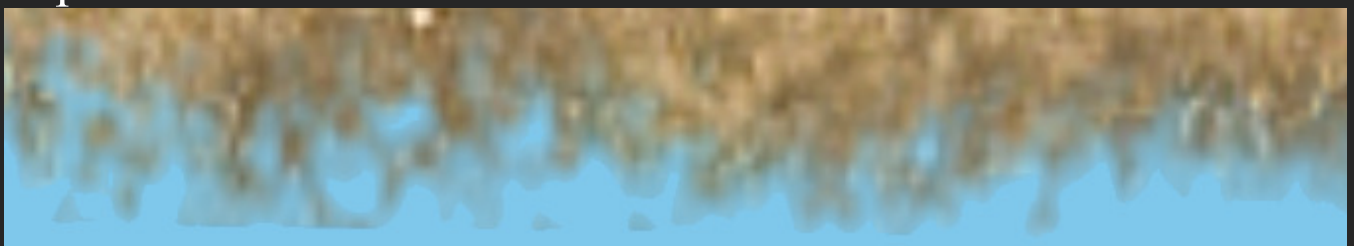
AlphaTestVal 0.9



AlphaTestVal 0.5



AlphaTestVal 0.2



It's best not to change any of the other values in the MAT file as doing so only seems to make things worse.



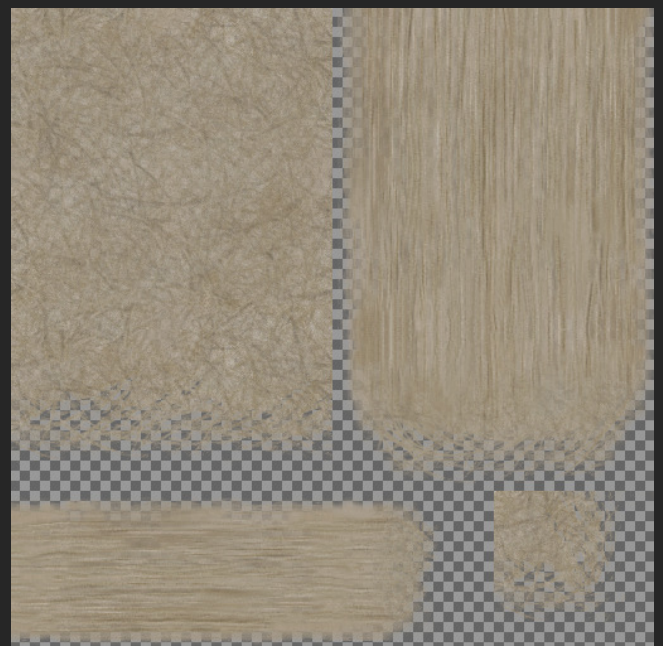
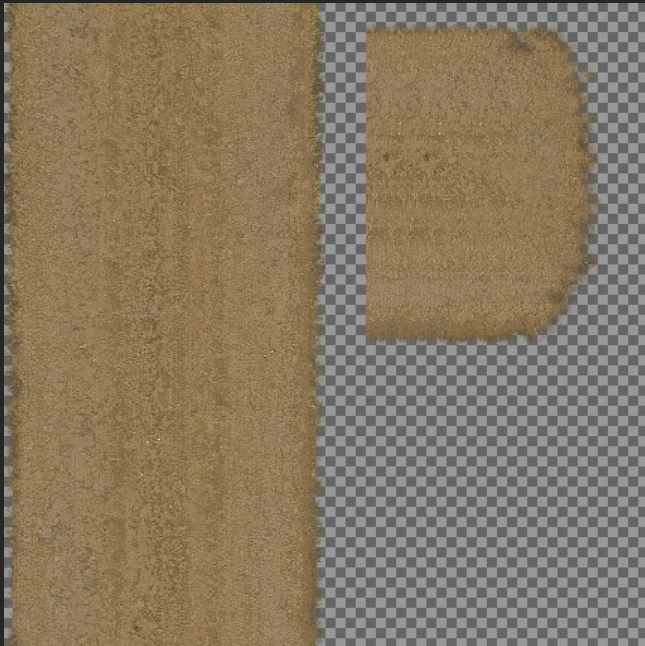
# PLATE EDGES

You have probably noticed when making a landing approach to a runway that the join lines between the plates show up in a very unpleasant way. You can see what I mean by looking at the right hand runway in the picture below.



My runway (on the left) has no join lines. The cause of this problem is to do with the fact that the texture does not end at the edge of the plate, as you would expect. It is repeated, even though you can't see it, & it causes a kind of ghost or reflection of itself to appear along the edge. It's especially noticeable from a few kilometres away.

If you take a look at the textures of both plates you can see that the Runway of the Pacific Sand plate (on the right) goes from the top of the sheet to the middle, where it merges into the Runway End. My Runway goes all the way from top to bottom.



Where the Sand Runway merges with the Runway End (in the middle of the sheet) is not a problem, but the top end is.

To eliminate the nasty join lines the texture needs to extend beyond the top edge of the sheet by about 1/16th the height of the texture sheet.

The Pacific Sand Plate texture is 512x512 & 1/16th of that is 32. You could reposition the texture on the plate so that it overlapped the top edge of the plate by 32 pixels. Another way is to add an extra bit of Runway texture to the bottom of the sheet.

The picture below shows where to put the extra piece of Runway.



Now the join lines are almost completely eliminated. It's not perfect. To make it perfect the Runway texture would have to go all the way from the top of the sheet to the bottom.

So to eliminate join lines textures need to overlap the ends of plates by **64 pixels** (if you are using a **1024x1024** texture sheet). This is why, when positioning the **RunwayEnd** texture, I told you to allow an overlap of 64 pixels. This is also true if the plate has transparent edges, the transparent part of the texture needs to overlap the plate edge by 64 pixels.



Alternatively, the texture has to go the full length (or width) of the sheet.

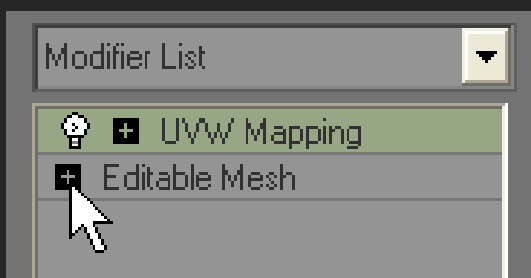
# REPEATING TEXTURES



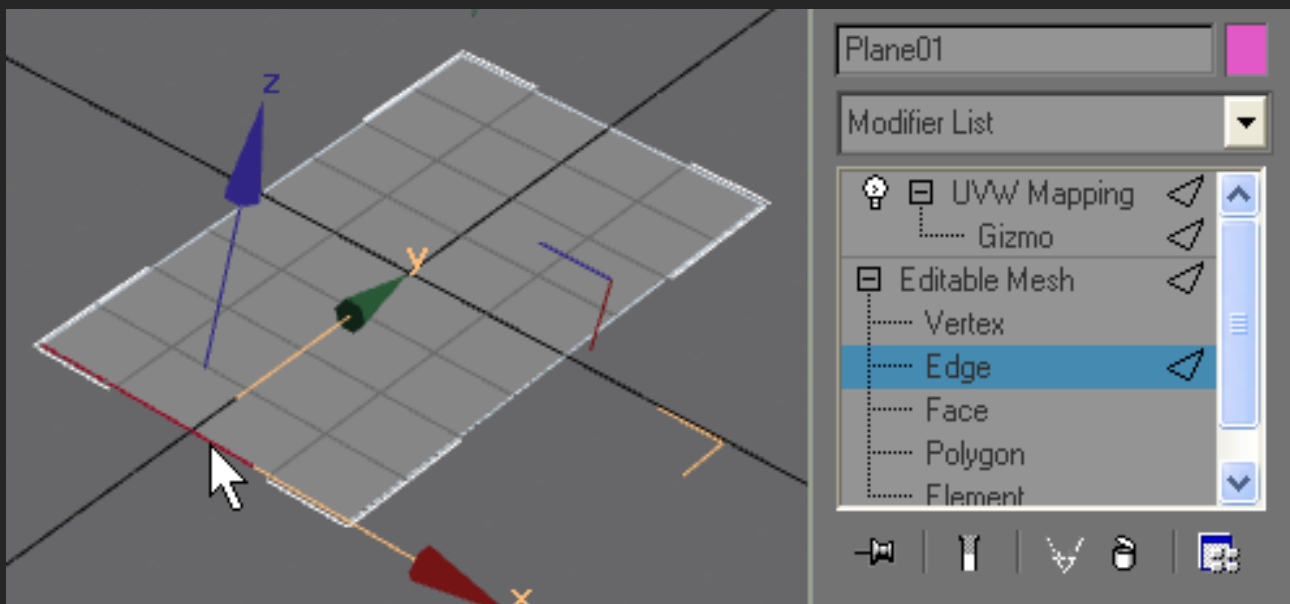
If you wanted the Runway to be twice as long, with the texture from the top half repeated on the bottom half, it's very easy to do. All that needs to be done is stretch the plate to twice its length. That's it. The texture repeats itself automatically.

I'll show you how to stretch the plate.

Click the small + sign next to **Editable Mesh** to drop down a Menu



Select **Edge** from the list. Then Click the bottom edge of the plate to select it.

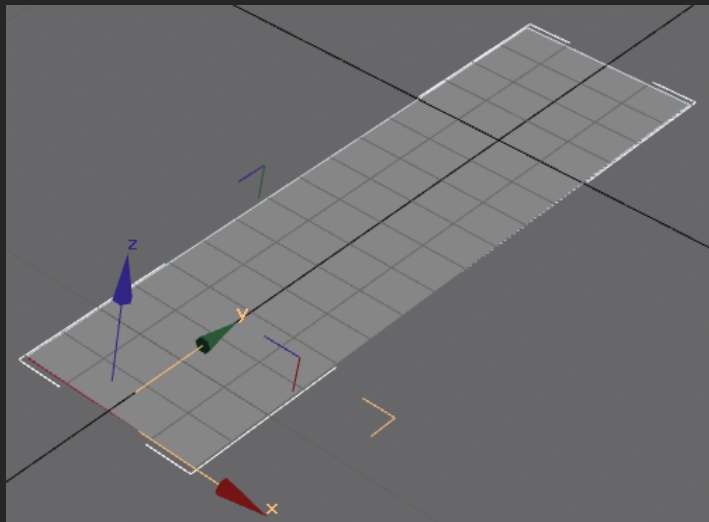




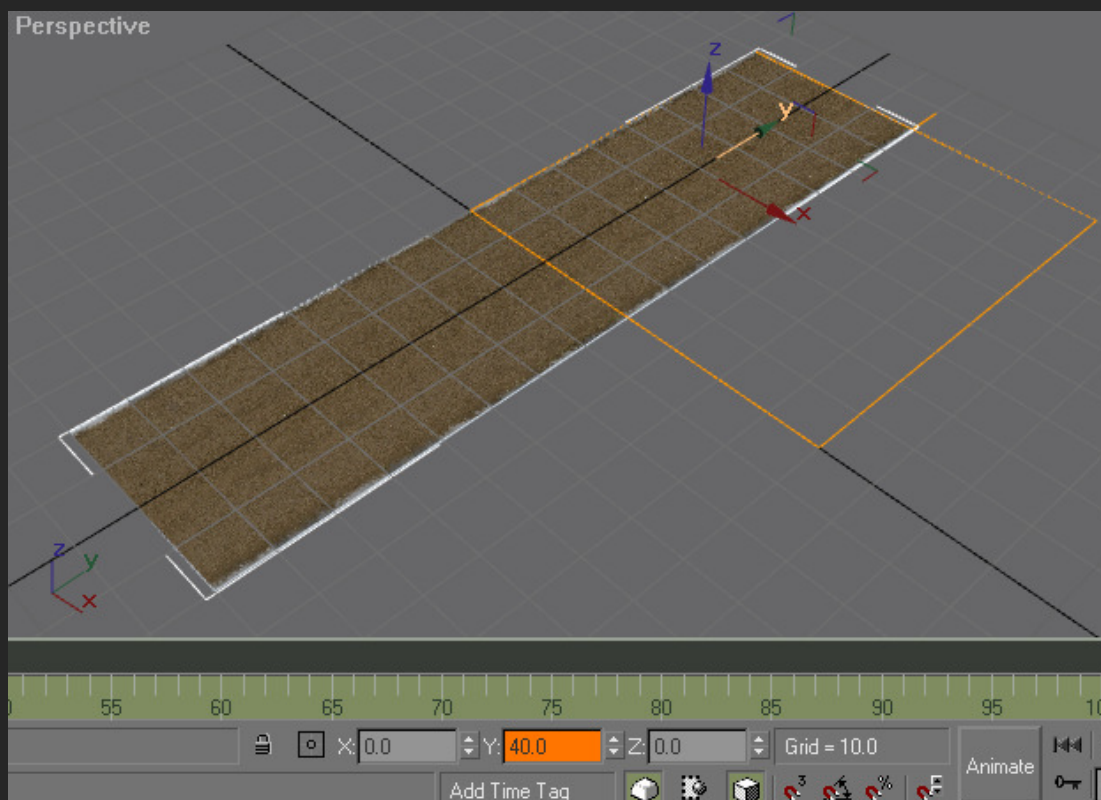
In the **Y axis** box type in **-120** to make the plate twice as long.



All measurements are taken from the cross hairs in the centre of the screen. The edge selected was -40 so adding an extra 80m equals -120



Now reposition the plate with the cross hairs in its centre.



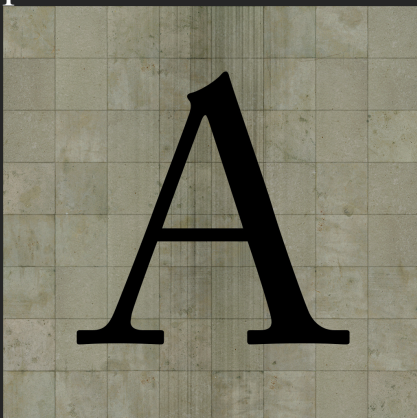
# TWO TEXTURES ON ONE PLATE



Normally one texture is enough for any plate but there may be circumstances where you need two different textures on the same plate. This is not difficult to do but it does mean you end up with eight MAT & eight Texture files just for one plate.

Below are the two textures you are going to use. They are in the FILES folder that came with this tutorial.

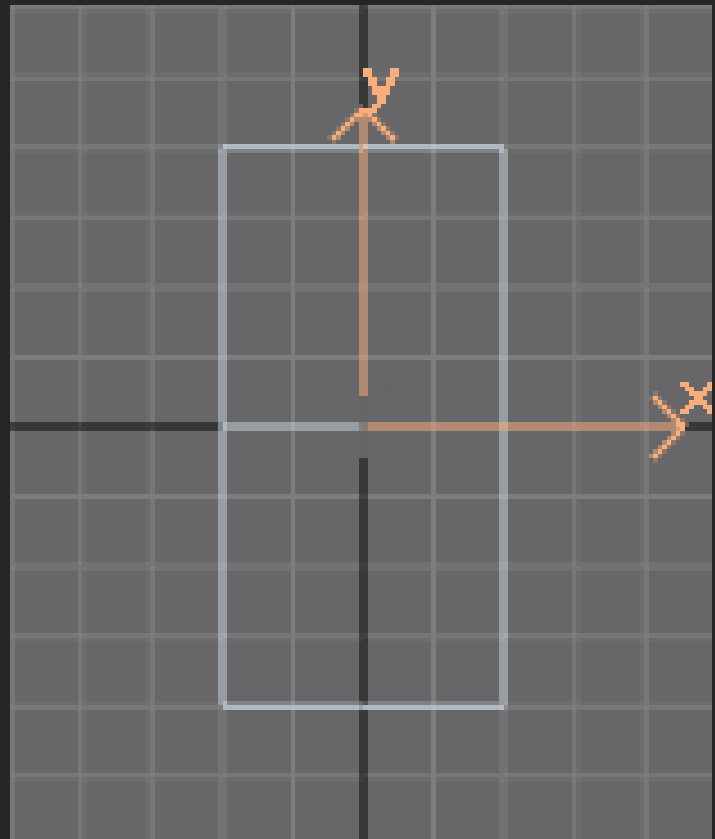
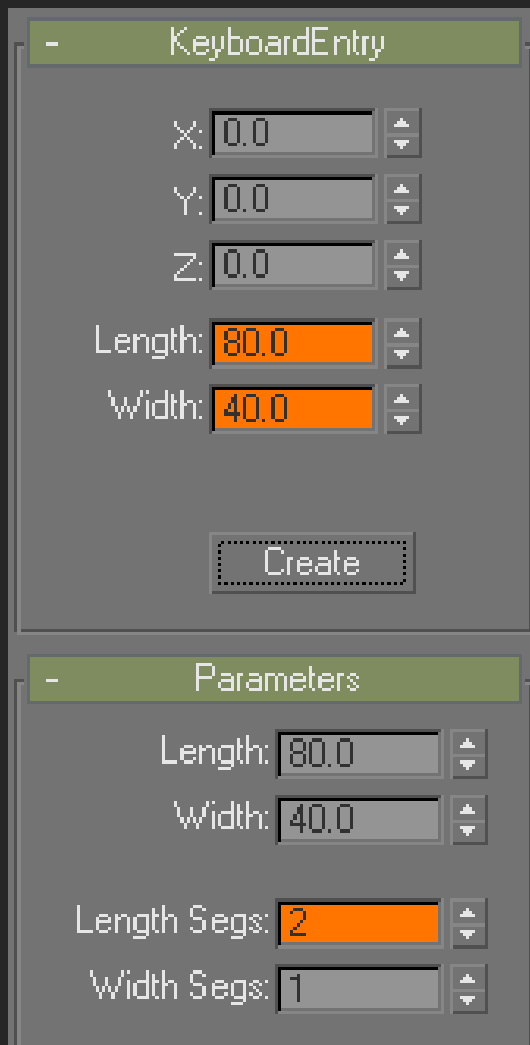
plateA0



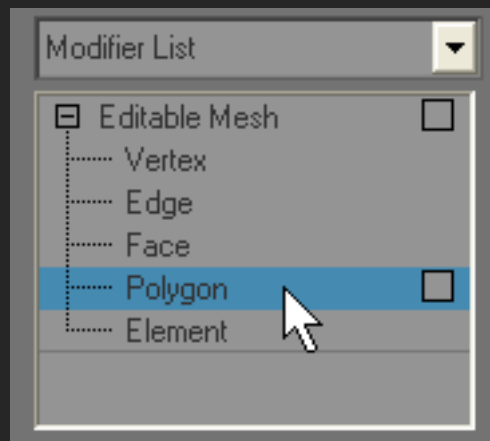
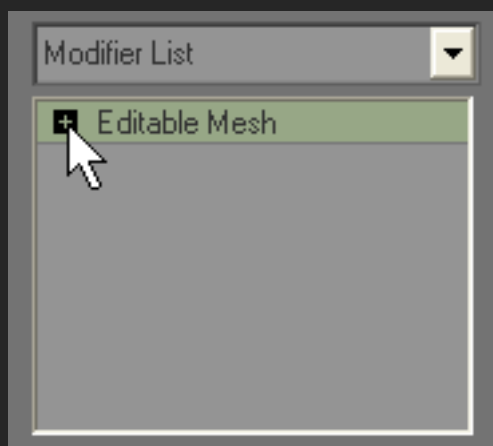
plateB0



Create a new plate **80x40** but make it with two Segments instead of one.



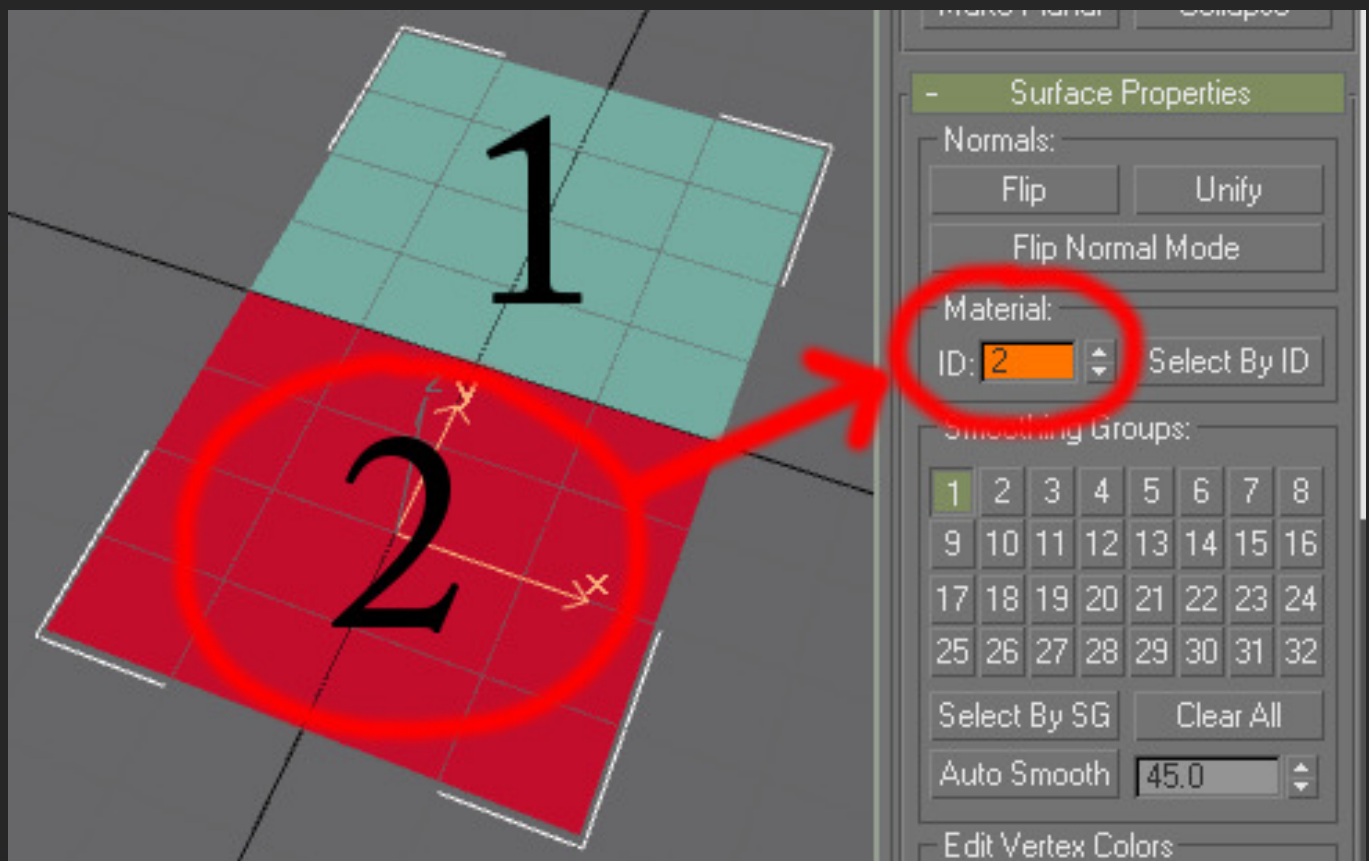
Then convert it to an **Editable Mesh** & click the **+** sign to open out a list underneath. Select **Polygon**.



Scroll down to the **Surface Properties** section by using the narrow slider on the right edge of the screen.



You need to give each Polygon (segment) a separate number. By default both polys are assigned number 1 so you need to click on the lower poly & change the number in the **ID** box to **2** (press the F2 key to make the selected poly turn red).

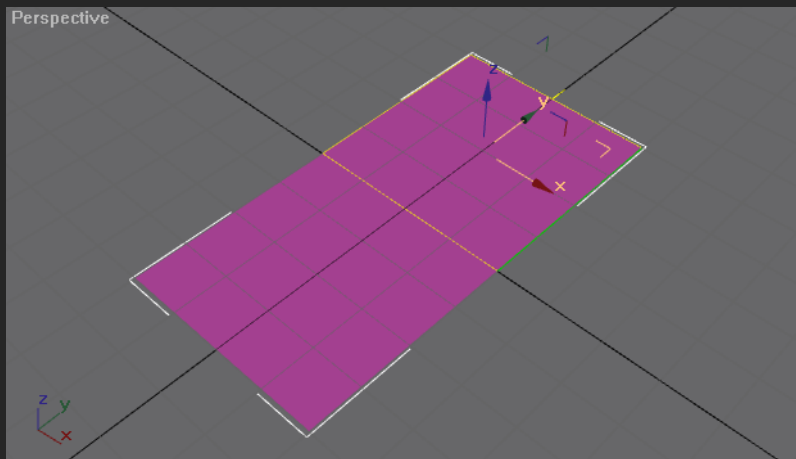




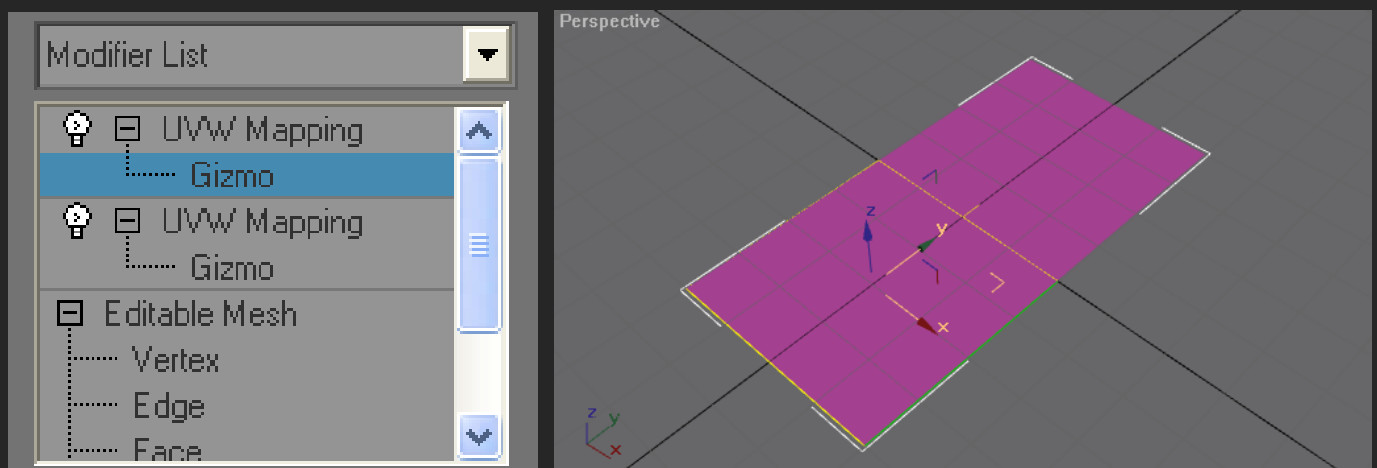
Before adding a UVW Map, make sure **Polygon** is unselected by clicking on **Editable Mesh**.



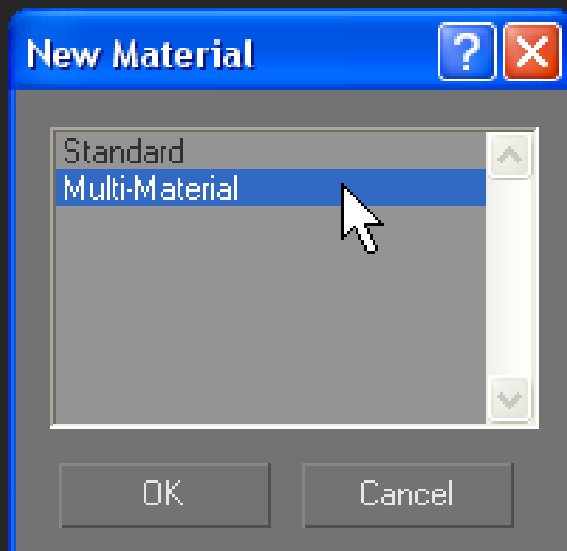
Now add the **UVW Map**. Make it **40x40**. Select the Gizmo & position it on the plate where you want the first texture to go (on poly 1).



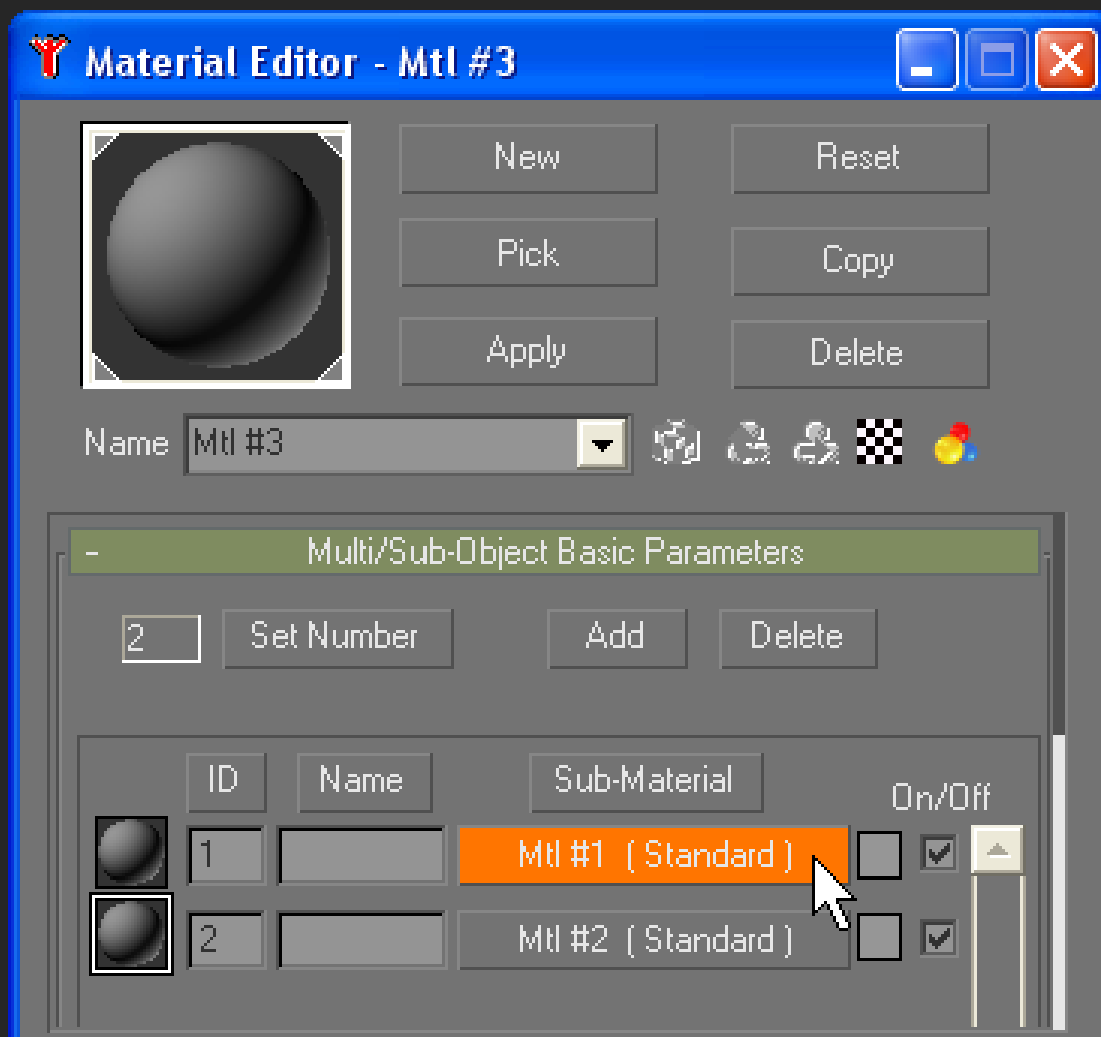
Now you need to add another **UVW Map**. Make it **40x40** & position it where you want the second texture to go (on poly 2).



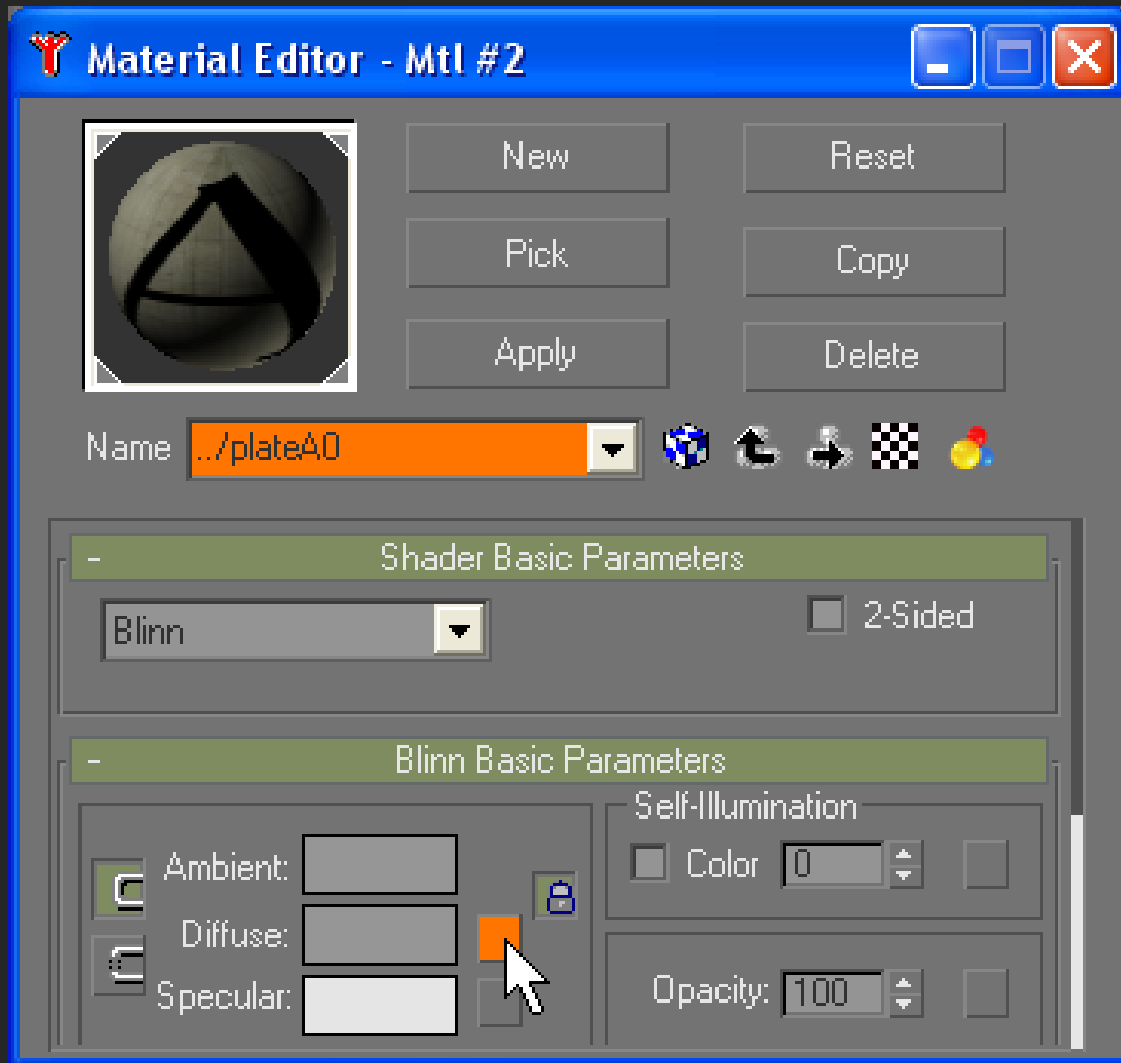
Then open the **Material Editor** & press the **New** button.  
In the **New Material** window select **Multi-Material**



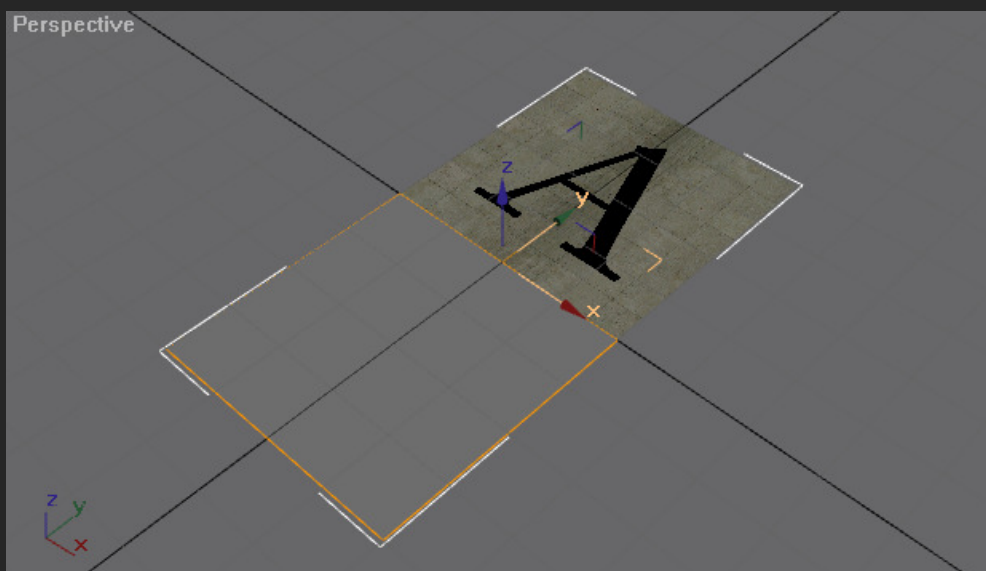
In the Material Editor you will see a section which shows two material **IDs**. Press the first button which says **Mtl #1 (Standard)**



Write the name of the first Material in the **Name** box (**../plateA0**). Then press the button next to **Diffuse**



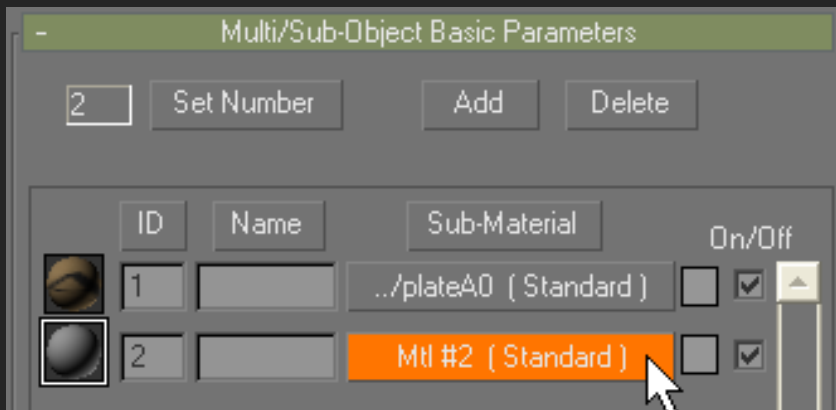
Choose the Texture in the normal way & apply it to the plate.



There's a small button in the Material Editor with a bent arrow on it called **Go to parent**. Press this twice



It takes you back to the Material ID page. Press button 2

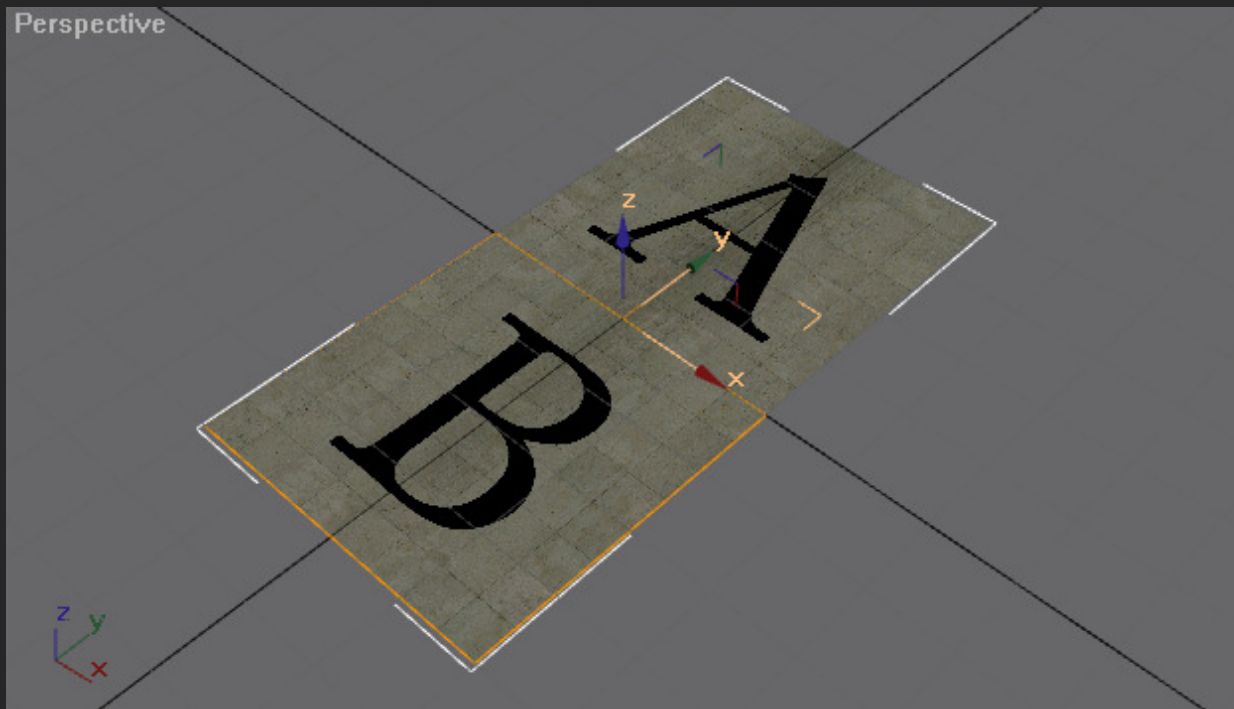


Name the second Material with a different name (**../plateB0**) & follow the same process as before to select the second texture.

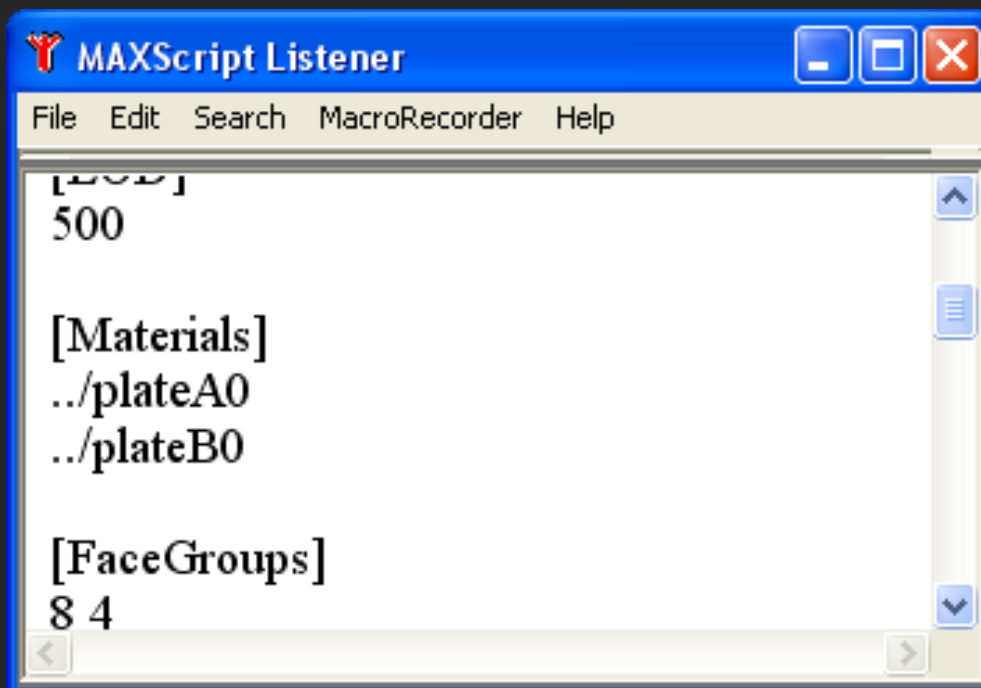




Apply it to the plate



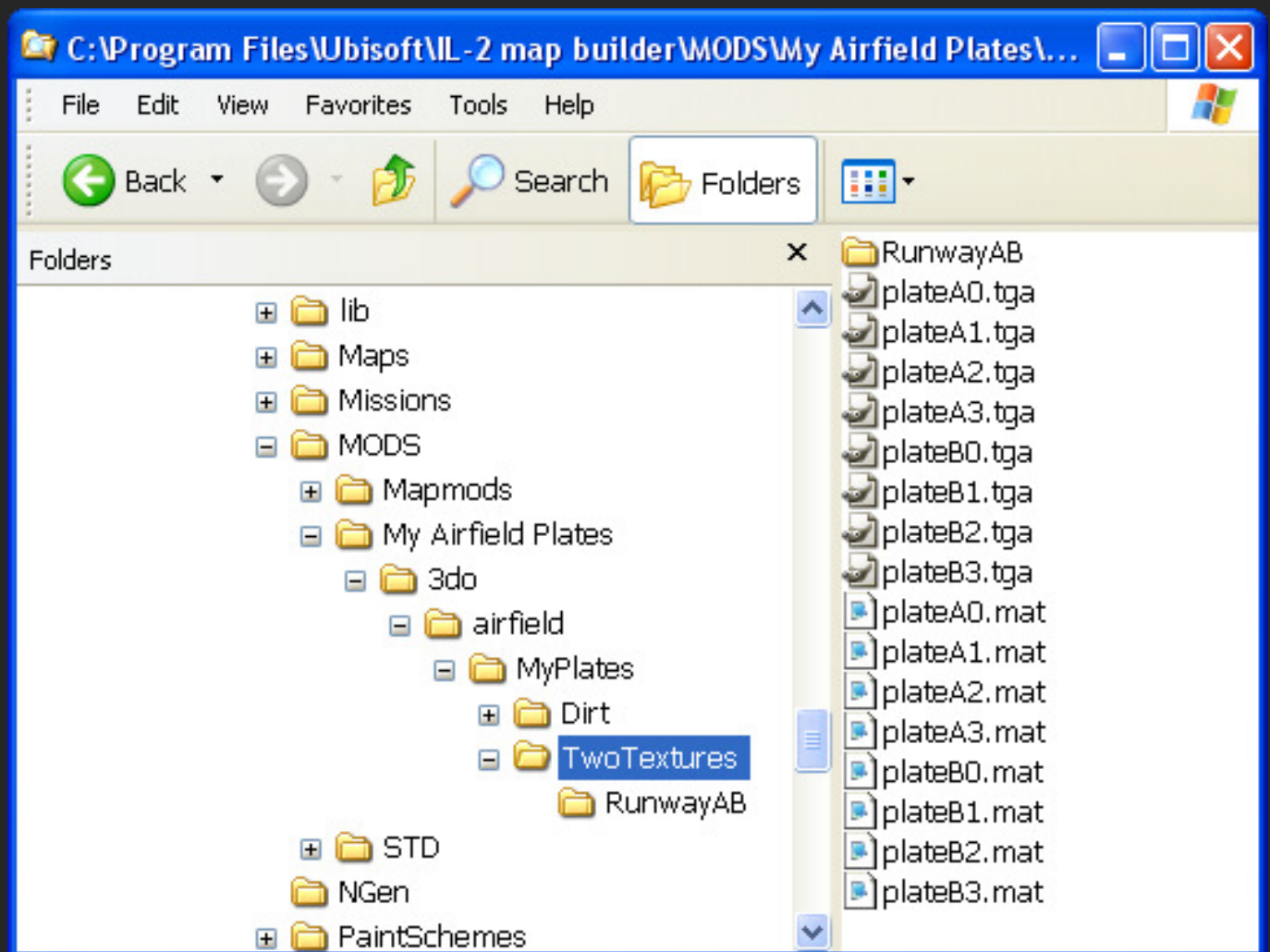
When it's Exported to the Listener there are two names in the Materials section.



Make sure that when you write the other 3 LODs all the Materials sections have two MAT names.

I have included an extra four MAT files for **plateB**.

This is how all the files look when finished -



THE END