

Palette Modifier Guide



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1. Introduction

Thank you for purchasing **Palette Modifier**. I hope this editor extension will help you make your game world more colourful and unique.

If you have any issues or feature requests, please contact me using the one of the links at the end of this guide.

2. Texture Grid Scriptable Object

To be able to correctly modify the colors of a texture atlas, like the one in *Figure 1*, Palette Modifier needs to know which parts of a texture atlas are a single flat color and which are texture patterns. It also needs to know where they are located on the texture atlas. The **Texture Grid** scriptable object is used to store this information.



Figure 1

2.1. Create a Texture Grid

To create a new **Texture Grid**, right click inside the **Project** window and in the context menu select **Create->Palette Modifier->Texture Grid**, Figure 2.

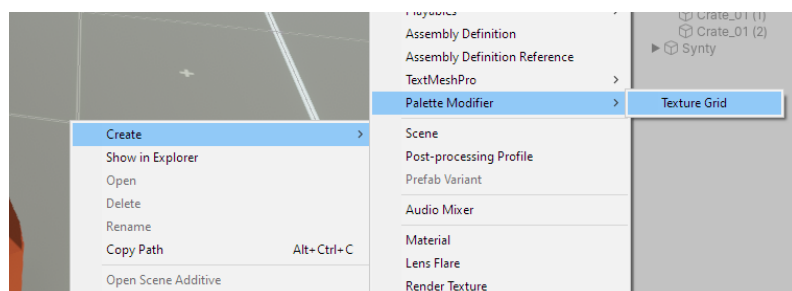


Figure 2

Select the **Texture Grid** in the Project window, and in the Inspector window, place the texture atlas used by the object you want to modify the colors of, in the **Texture Atlas** field, Figure 3.

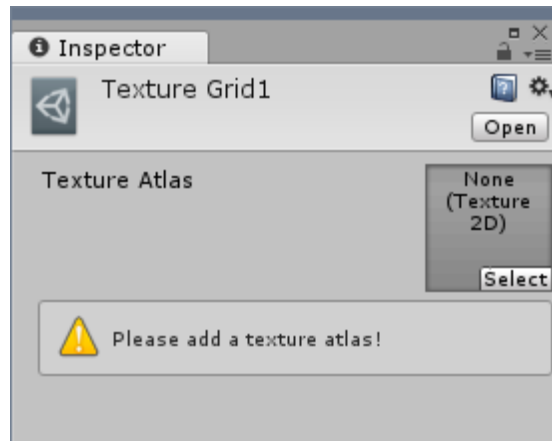


Figure 3

You can also select the texture atlas you want to modify, right click it and create a **Texture Grid**. By doing so, the new **Texture Grid** will have the texture atlas already assigned to it as well as have the same name as the texture atlas plus the prefix TG_.

Depending on the settings of your texture atlas, you may see 2 warning messages after you place the texture atlas in the **Texture Atlas** field, Figure 4.

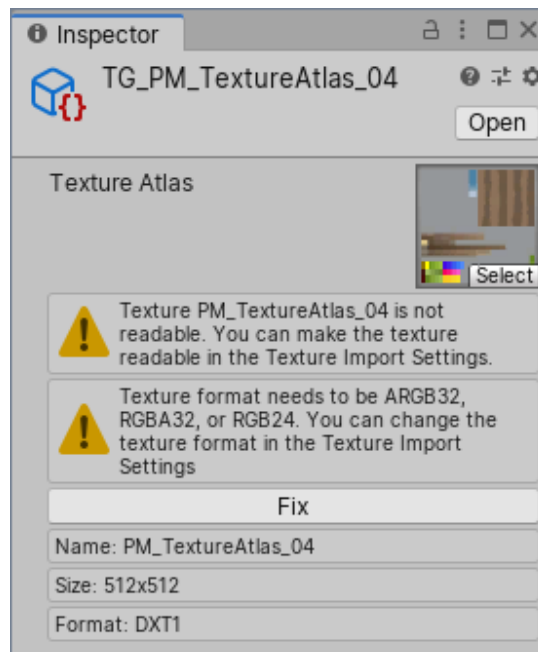


Figure 4

Since PM modifies the data of a texture, we have to enable **Read/Write** toggle and set the texture format to **RGBA32**, **ARBA32** or **RGB24**. This can be done in the texture atlas **Import Settings** Figure 5, or you can press the **Fix** button, Figure 4.

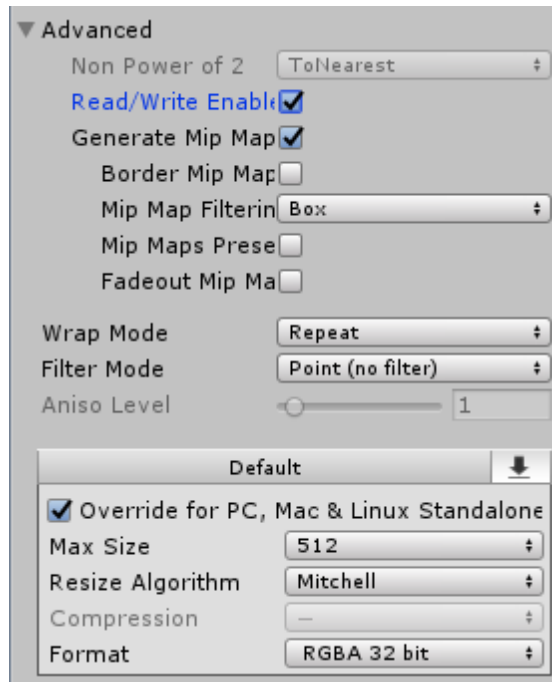


Figure 5

After you enable **Read/Write** and change the format, “**Open Grid Editor**” button will appear in the inspector. Press it to open the grid editor window, Figure 6.

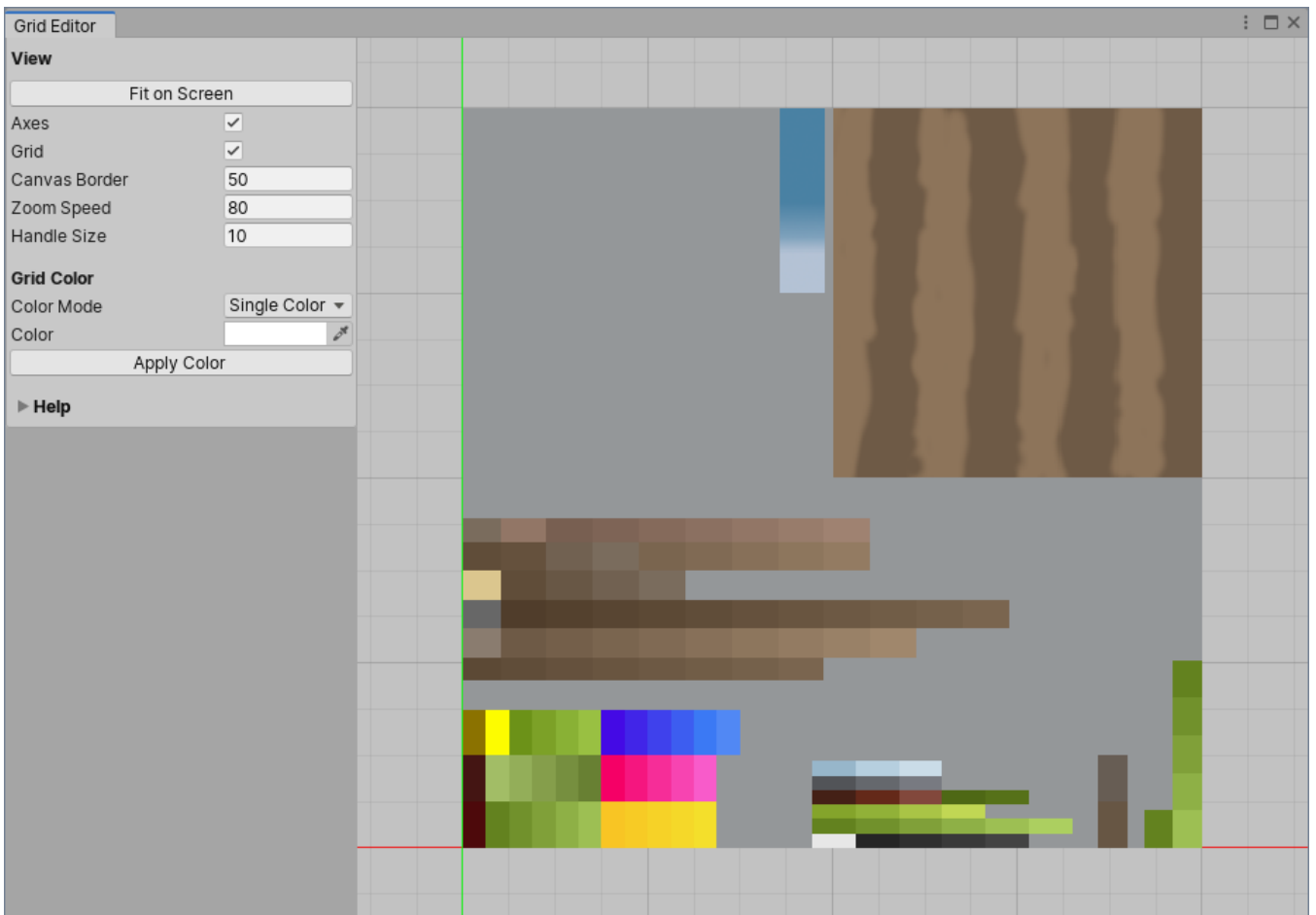


Figure 6

2.2. Grid Editor Window

The Grid Editor Window can be opened by selecting a **Texture Grid** scriptable object and pressing the button “**Open Grid Editor**”. The **Grid Editor** has several distinct sections: the *side panel*, the *viewport* and the *active canvas*.

2.2.1. The Side Panel

This section is divided in two parts. The top part contains the viewport settings, Figure 7.

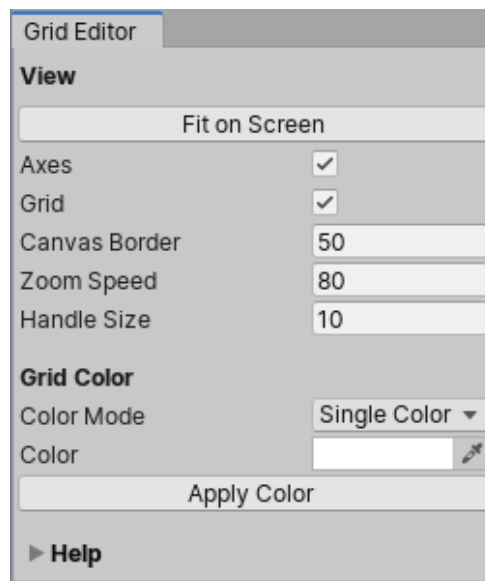


Figure 7

- **Fit on Screen** - Resizes the active canvas based on the current size of the viewport and the value of **Canvas Border**.
- **Axes** - Shows/Hides the viewport axes.
- **Grid** - Shows/Hides the viewport grid.
- **Canvas Border** – The minimum distance between the active canvas and viewport edges, when *Fit on Screen* option is used.
- **Zoom Speed** – The speed of the zoom in/out.
- **Handle Size** - The size of a Flat Color Grid/Texture Rec handles.
- **Color Mode** - Controls how the *Flat Color Grids/Texture Recs* that exist on the active canvas, should be colored. When set to **Single Color**, all the *Flat Color Grids/Texture Recs* will be colored based on the value of **Color** field. When set to **Random Color**, a random color will be applied to the *Flat Color Grids/Texture Recs*.
- **Color** – The color that is be applied to all *Flat Color Grids/Texture Recs*.

- **Apply Color** – Changes the colors of the *Flat Color Grids/Texture Recs*, based on the settings of the **Color Mode**.

The bottom part is a scroll area and contains the settings of all the *Flat Color Grids and Texture Rectangles* that exist on the active canvas, Figure 8.

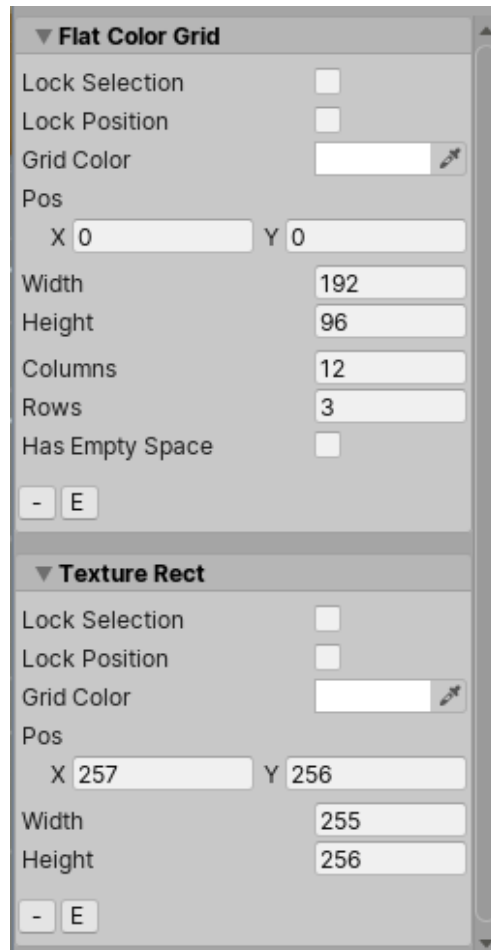


Figure 8

- **Lock Selection** – When this toggle is enabled, a *Flat Color Grid/Texture Rec* can't be selected with just left mouse click. You have to hold **LEFT SHIFT** to be able to select or modify a *Flat Color Grid/Texture Rec*.
- **Lock Position** – When this toggle is enabled, a selected *Flat Color Grid/Texture Rec* can't be dragged. This feature is useful when you change the position of a vertical/horizontal line of a *Flat Color Grid* as it will make sure you don't accidentally move the grid instead of the line.
- **Grid Color** – The color of a *Flat Color Grid/Texture Rec* on the active canvas.
- **Pos** – The position of a *Flat Color Grid/Texture Rec* in the texture pixel space. The origin of a *Flat Color Grid/Texture Rec* is at the bottom left corner of the *Flat Color Grid/Texture Rec*.

- **Width** – The width of a *Flat Color Grid/Texture Rec* in the texture pixel space.
- **Height** - The height of a *Flat Color Grid/Texture Rec* in the texture pixel space.
- **Columns** – The number of columns a *Flat Color Grid* has.
- **Rows** - The number of rows a *Flat Color Grid* has.
- **Has Empty Space** – This option should be enabled if the segment of the texture atlas that is covered by a *Flat Color Grid* has unused space. When *Break Color Sharing* is used PM will search for *Flat Color Grid* that have “**Has Empty Space**” toggle enabled.
- **The “-” button** – Deletes a *Flat Color Grid/Texture Rec*.
- **The “E” button** – Allows you to edit the title of a *Flat Color Grid/Texture Rec*.

2.2.2. Viewport Controls

Viewport drag – To drag the viewport, click and hold the *middle mouse* button. The viewport will follow the movement of the mouse arrow. If your mouse doesn’t have a middle button, you can drag the viewport by holding *ALT + left mouse* button click and drag.

Viewport zoom – You can Zoom In/Out with the mouse scroll wheel. If your mouse doesn’t have a scroll wheel, you can use the “+”, “-“ keys.

2.2.3. Viewport Context Menu

When you right click in the viewport, a context menu will be displayed, Figure 9.

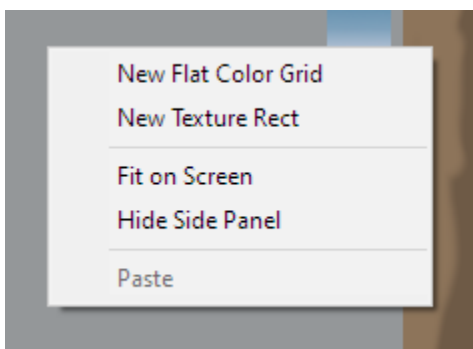


Figure 9

New Flat Color Grid – Creates a new *Flat Color Grid* with the origin at the current mouse position. If the mouse is outside the active canvas, its position is clamped so that the grid doesn’t go outside of the active canvas. The *Flat Color Grid* is placed on those parts of the texture atlas that have flat colors, Figure 10.

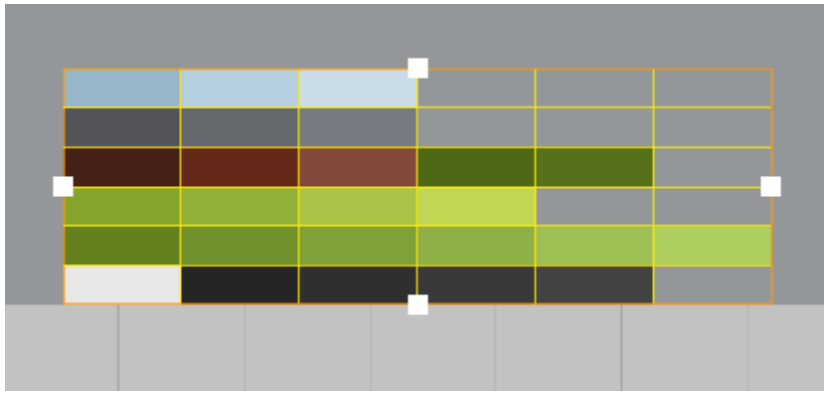


Figure 10

New Texture Rect – Creates a new *Texture Rect* with the origin at the current mouse position. If the mouse is outside the active canvas, its position is clamped so that the Rect doesn't go outside of the active canvas. The *Texture Rect* is placed on top of those parts of the texture atlas that have texture patterns, Figure 11.

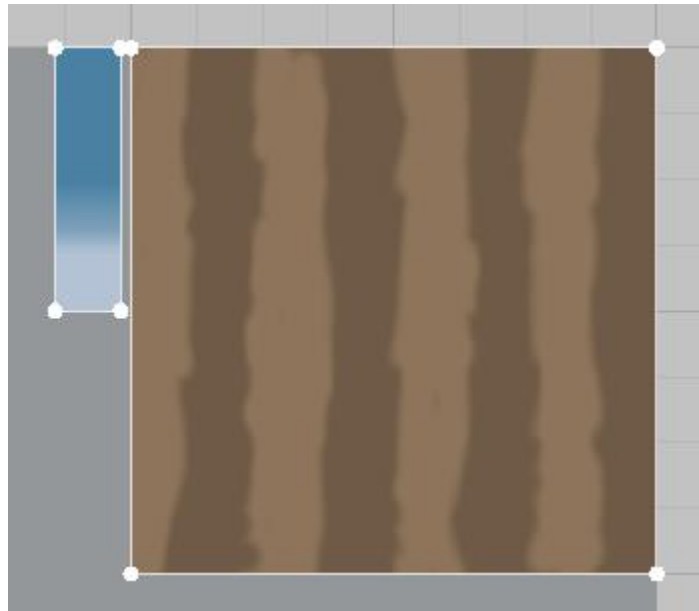


Figure 11

Fit on Screen - Resizes the active canvas based on the current size of the viewport and the value of **Canvas Border**.

Hide/Show Side Panel – Hides/shows the side panel.

Paste – Pastes a *Flat Color Grid/Texture Rect* if one was copied.

2.2.4. Flat Color Grid/Texture Rect Properties

The *position*, *width* and *height* of a *Flat Color Grid/Texture Rect* can be changed from the side panel, or you can click and drag one of the 4 handles, Figure 12.

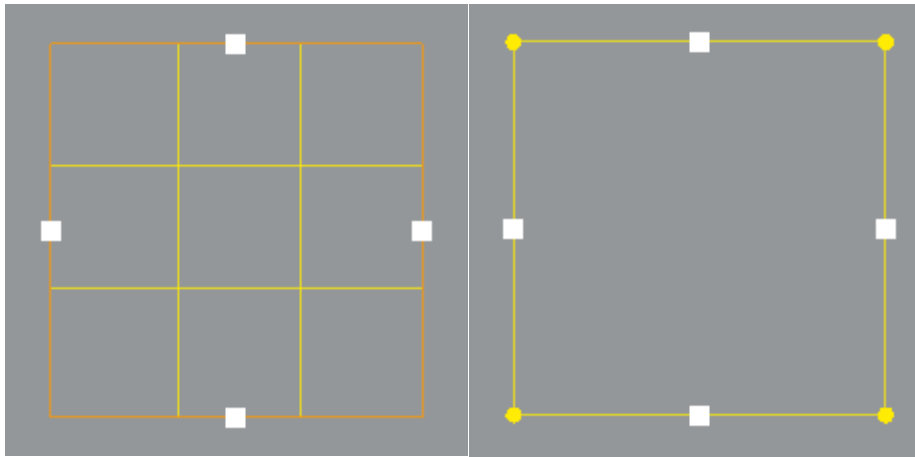


Figure 12

2.2.5. Flat Color Grid Context Menu

When you right click a selected *Flat Color Grid*, the following context menu will be displayed, Figure 13.

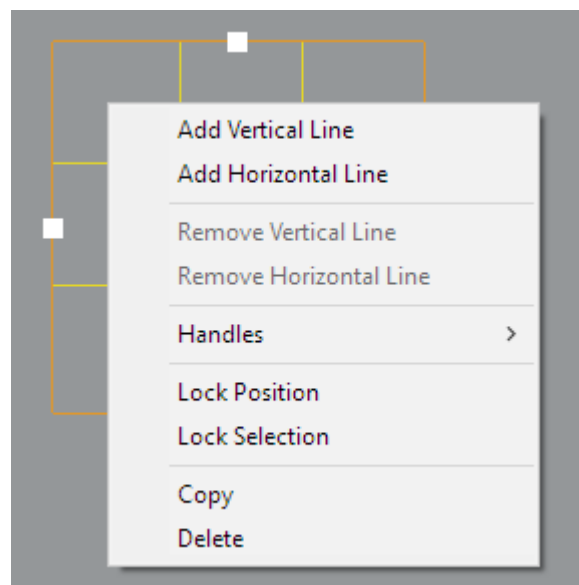


Figure 13

Add Vertical Line – Adds a vertical line in the column where the mouse arrow is currently located.

Add Horizontal Line – Adds a horizontal line in the row where the mouse arrow is currently located.

Remove Vertical Line - Removes a vertical line. This option becomes available only if the mouse arrow was over a vertical line when right click was performed.

Remove Horizontal Line - Removes a horizontal line. This option becomes available only if the mouse arrow was over a horizontal line when right click was performed.

Handles – Leads to a submenu with handle position options, Figure 14.

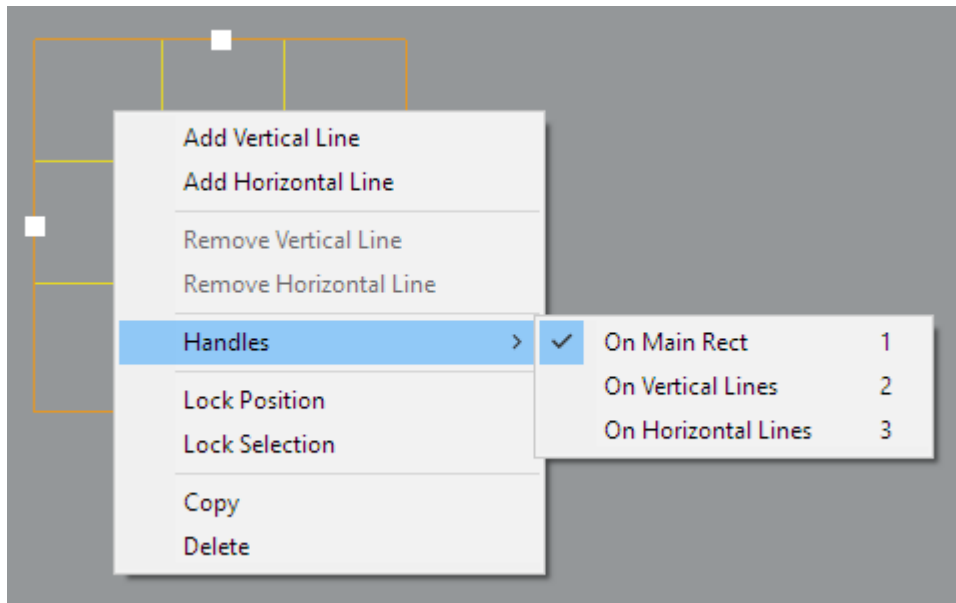


Figure 14

On Main Rect – Positions the handles on the main rectangle of the grid. Dragging a handle changes the width/height of the grid, Figure 15.

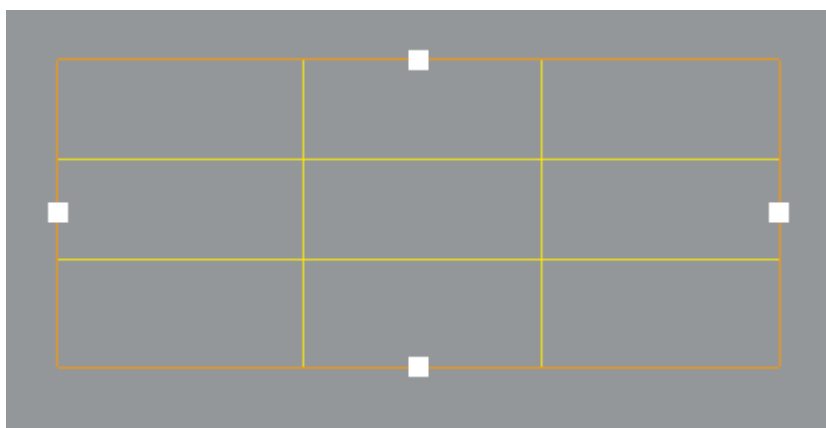


Figure 15

On Vertical Lines – Positions the handles at the center of the vertical lines. Dragging a handle changes the position on the X axis a vertical line has. A vertical line can only be moved between its neighbours and can't go past them, Figure 16.

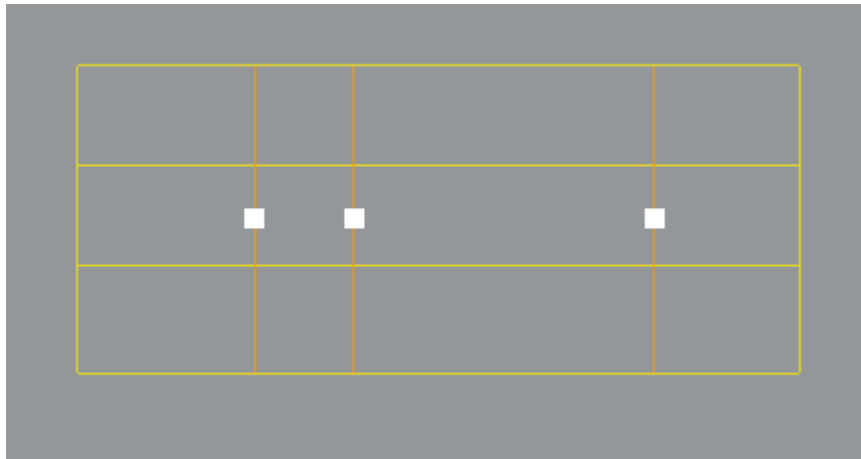


Figure 16

On Horizontal Lines - Positions the handles at the center of the horizontal lines. Dragging a handle changes the position on the Y axis a horizontal line has. A horizontal line can only be moved between its neighbours and can't go past them, Figure 17.

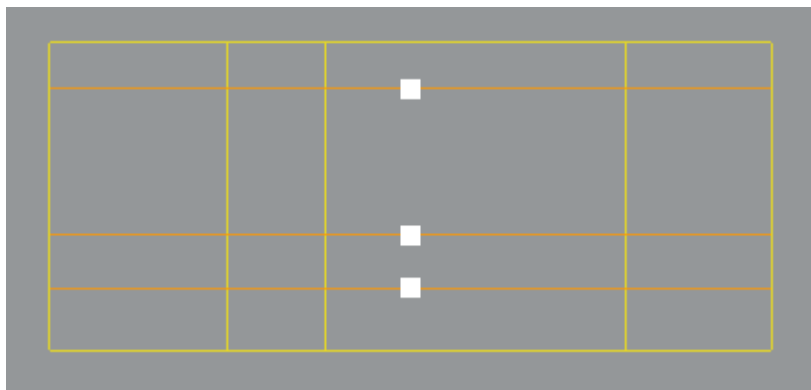


Figure 17

Lock Selection – When this toggle is enabled, the grid can't be selected with just left mouse click. You have to hold **LEFT SHIFT** to be able to select and move the grid handles.

Lock Position – When this toggle is enabled, the grid can't be dragged. This feature is useful when you change the position of a vertical/horizontal line, as it will prevent you from accidentally moving the grid instead of a line.

Copy – makes a copy of the currently selected grid.

Delete – Deletes the currently selected grid.

3. Palette Modifier Script

After the **Texture Grid** scriptable object is created, select the GameObject you want to change the colors of, click the **Add Component** button and search for “**Palette Modifier**”, Figure 18.

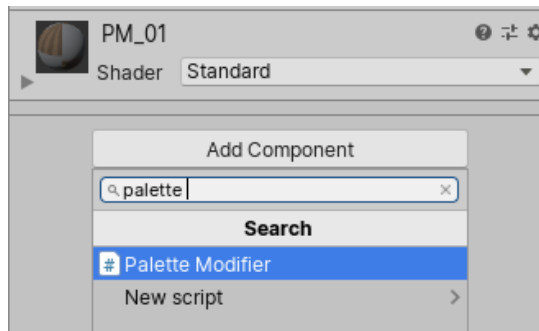


Figure 18

After the script is added, PM will search for a **Texture Grid** with a reference to the texture used by this object, then it will build a list of all the colors that are used by the current GameObject, Figure 19.

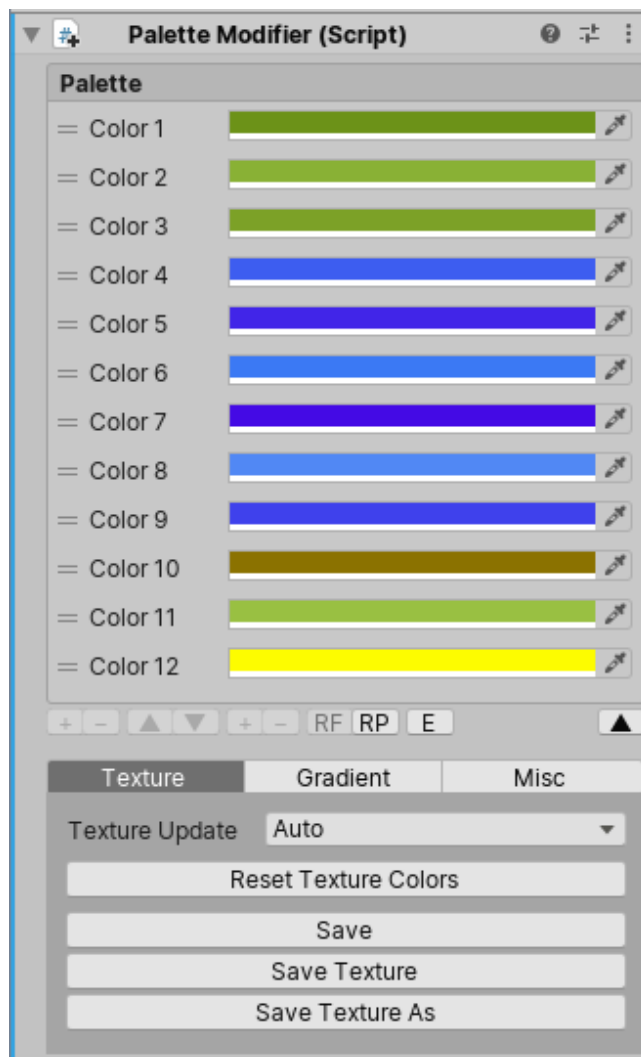


Figure 19

3.1. Color List

The object colors are drawn in the Inspector window as a recordable list. This means that you can select a color field and move it up/down in the list.

The field that points to a flat color on the texture atlas, has the name “**Color**” followed by the number in the list, Figure 19, Figure 20. The value of a field is directly applied to the texture atlas.

The field that points to a texture pattern on the texture atlas, has the name “**Tex**” followed by the number in the list, Figure 20. The value of the field “**Tex**” is not applied directly to the texture pattern, but is used as a tint color.

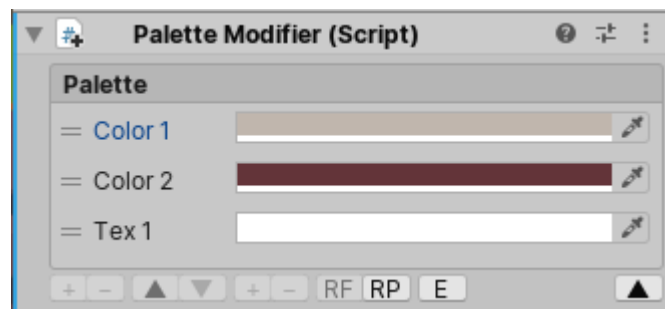


Figure 20

3.2. Color List Buttons

A color palette has a number of buttons at the bottom. Most of these buttons will be inactive when you first add the **Palette Modifier** script, Figure 19, Figure 20. They will become active when certain conditions are met.

Add Color - The “+” button on the left adds a color to the current palette, Figure 21. The button becomes active only if a color is deleted.

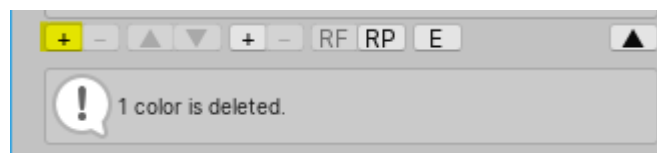


Figure 21

Remove Color - The “-” button on the left, deletes a color. The button becomes active only when a color field is selected, Figure 22.

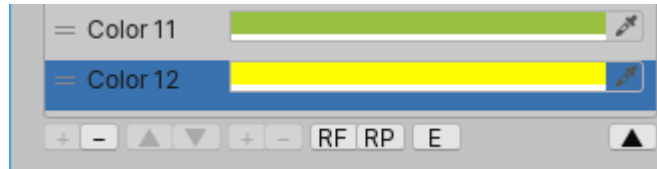


Figure 22

Move Palette Up/Down Button – Moves a palette up or down. These buttons become active only when there are 2 or more color palettes in the inspector, Figure 23.

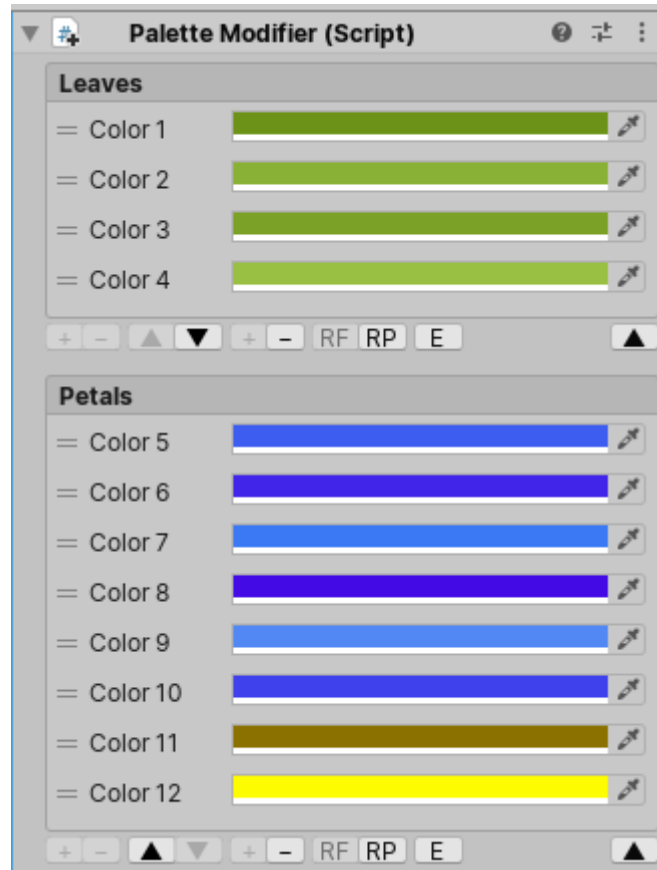


Figure 23

Create New Palette Button – Creates a new palette if there are deleted colors, Figure 24.

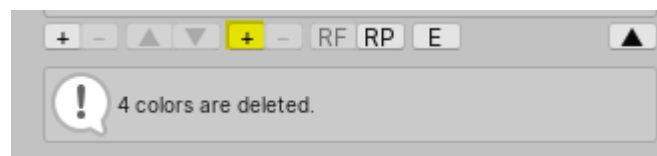


Figure 24

Delete Palette Button – Deletes a palette. Becomes active only if there are more than one color palette in the inspector, Figure 24.

Reset Field Color Button – Resets the color of a field to its original value. Becomes active only if a color field is selected, Figure 25.

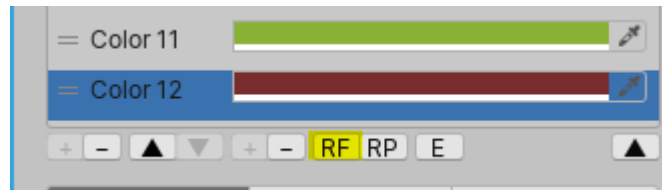


Figure 25

Reset Palette Colors Button – Resets the colors of a palette to their original values, Figure 26.

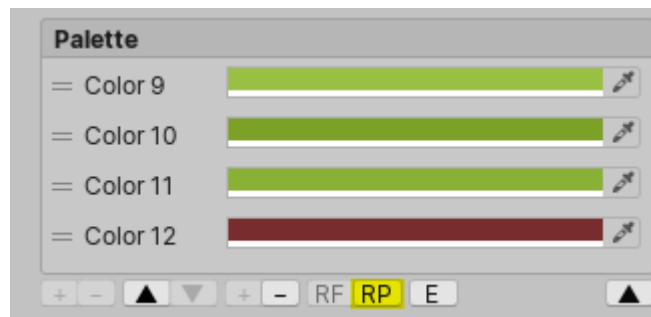


Figure 26

Edit Palette Button – Shows/hides 3 fields that control the properties of the reorderable list: *name*, *element height* and *field height*. Figure 27.

- **Palette Name** – The name of the color palette.
- **Element height** – Controls the height of a reorderable list element.
- **Color Field Height** – Controls the height of the color fields.

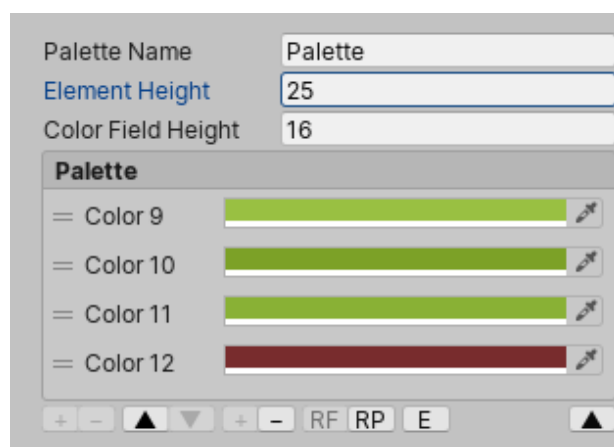


Figure 27

Collapse/Expand Button – Collapses or expands the list of colors, Figure 28.

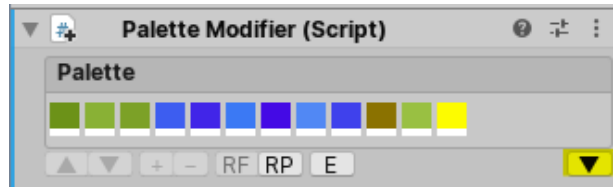


Figure 28

3.3. Texture Tab

This tab contains the options that change the texture atlas data, Figure 29.

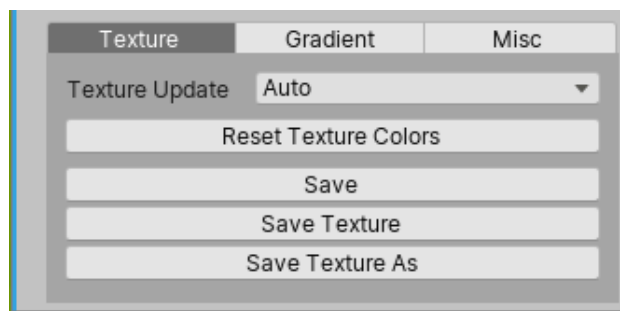


Figure 29

Texture Update – When set to **Auto**, every change you make to the color fields will be applied to the texture atlas in real time. When set to **Manual**, the changes will be applied to the texture only when the button **Update Texture** is pressed.

Reset Texture Colors - Resets the texture atlas colors to their original values. The original values of a texture atlas are the texture atlas data stored on you HDD.

Save – Saves the color changes for the selected GameObject. Changes to the texture atlas done by other objects will remain unsaved.

Save Texture – Saves all the changes done to the texture atlas.

Save Texture As – Creates a copy of texture and the **Texture Grid** that references this texture atlas. Any unsaved changes done to the original texture atlas will be reset.

3.4. Gradient Tab

This tab contains the gradient options, Figure 30. A gradient color can be applied only to the color fields that point to a flat color on the texture atlas. The gradient option is available only if and object has at least 3 flat colors.

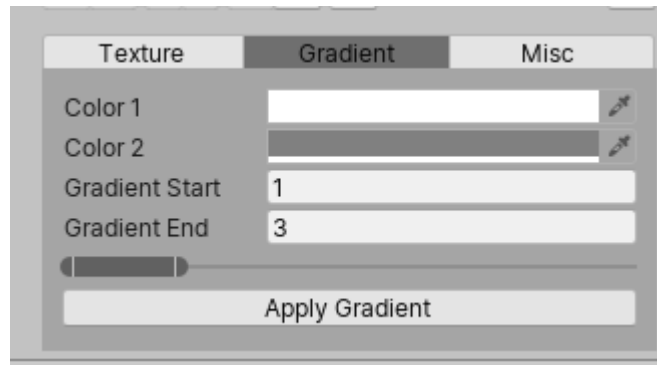


Figure 30

Color 1 – Start color of the gradient.

Color 2 – End color of the gradient.

Gradient Start – The color field where the gradient should start.

Gradient End – The color field where the gradient should end.

Apply Gradient – Applies a gradient to a range of colors.

3.5. Misc Tab

This tab contains different options, Figure 31.

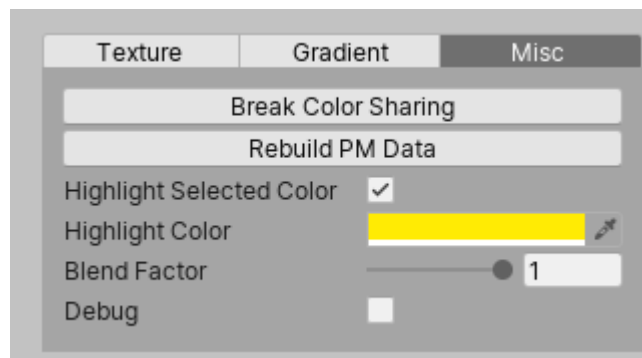


Figure 31

Break Color Sharing Button – When pressed, Palette Modifier creates a copy of an objects mesh and moves the UVs of the copy to a section of the texture that is unused by other objects, saves the new mesh and assigns it to the game object. This feature is useful when you want your object to have unique colors that are not shared with other objects.

Rebuild PM Data – Rebuilds the internal data that Palette Modifier created when the script is first added to the GameObject. This feature should be used when you made some changes to the **Texture Grid** scriptable object or made some changes to the GameObject model.

Color Numbering – Determines how the color field numbers are displayed in the inspector. This dropdown menu is available only when there are more than one palette of colors in the inspector. When set to **Continuous** the color numbering is continuous across palettes, Figure 34.

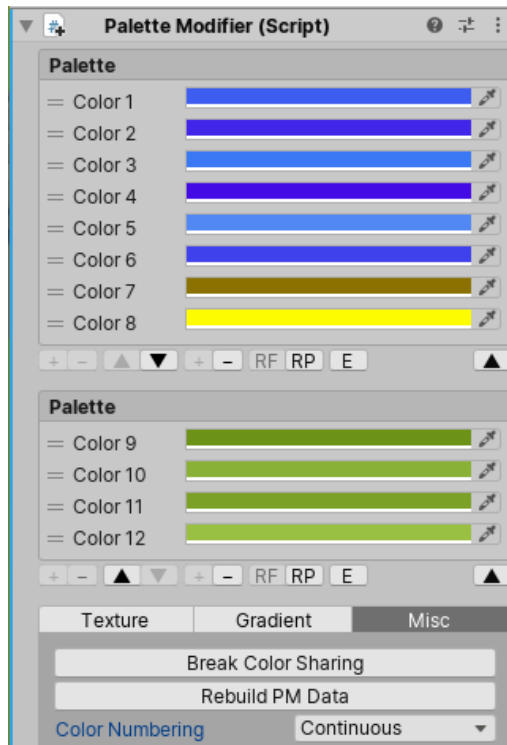


Figure 32

When set to **Per Palette**, the color numbering is restarted for every palette, Figure 34.

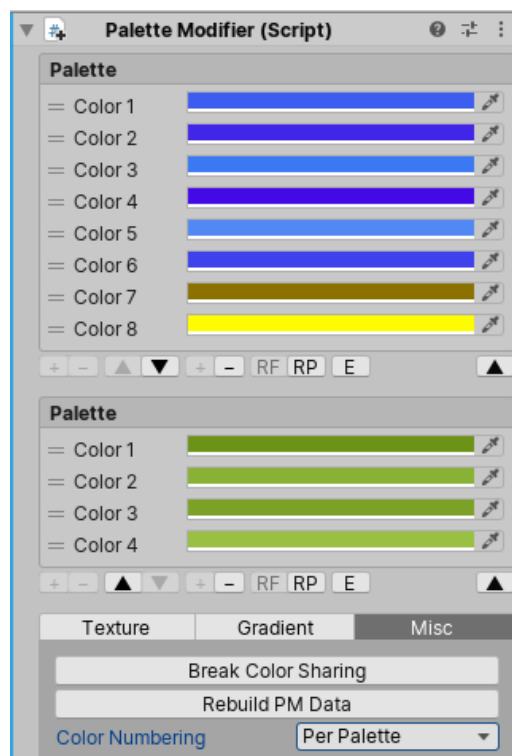


Figure 33

Highlight Selected Color – Enables/Disables the color highlight.

Highlight Color – The color that should be used when a highlight is applied.

Blend Factor – Used to determine the final color when color highlight is applied.

Debug - When enabled shows in the Texture tab some internal information, Figure 34.

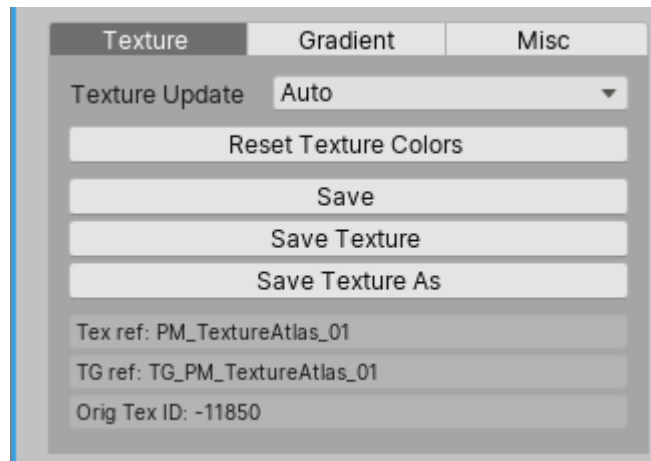


Figure 34

4. UV Inspector

The UV Inspector can be accessed from the **Window** menu, Figure 35.

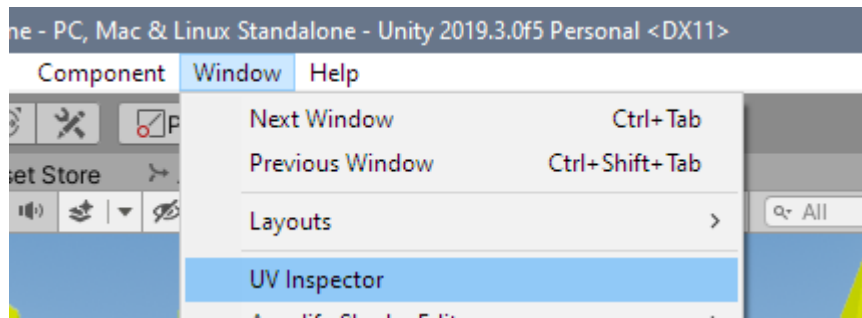
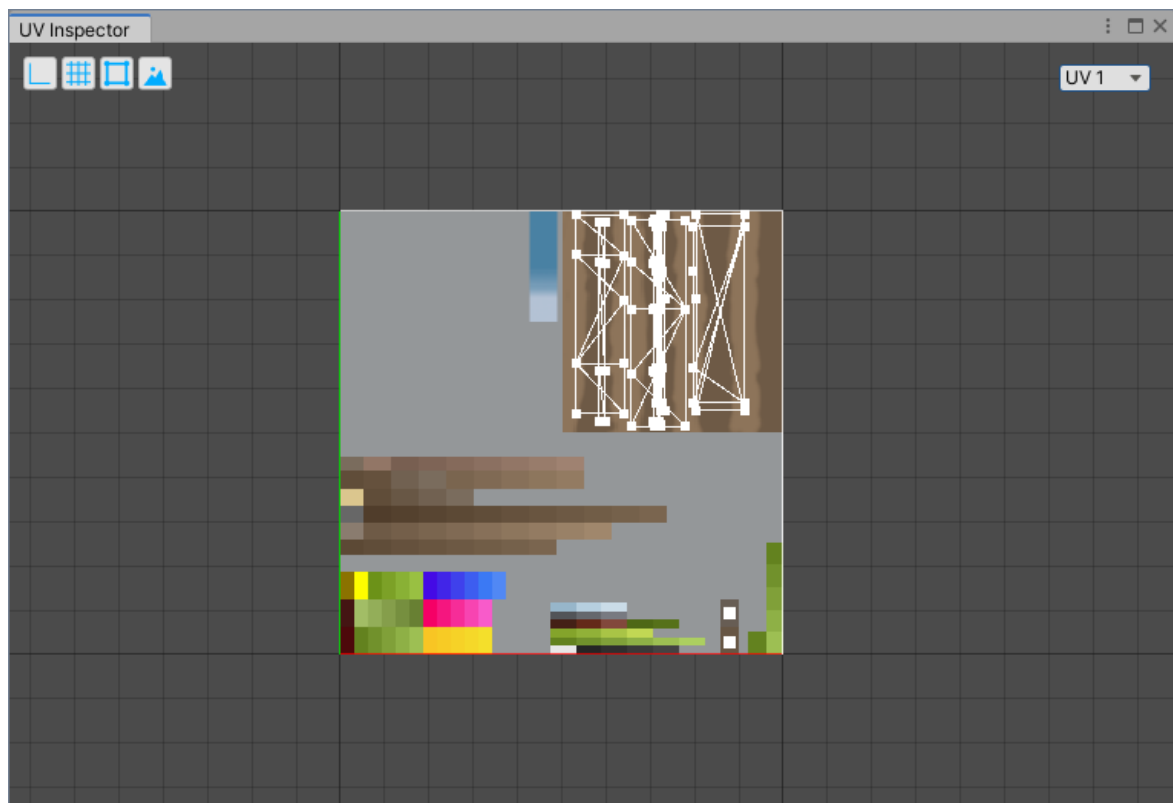


Figure 35



4.1. Viewport Controls

Viewport drag – To drag the viewport, click and hold the *middle mouse* button. The viewport will follow the movement of the mouse arrow. If your mouse doesn't have a middle button, you can drag the viewport by holding **ALT + left mouse** button click and drag.

Viewport zoom – You can **Zoom In/Out** with the mouse **scroll wheel**. If your mouse doesn't have a scroll wheel, you can use the **“+”, “-”** keyboard keys.

4.2. Viewport Context Menu

When you right click in the viewport, a context menu will be displayed, Figure 36.

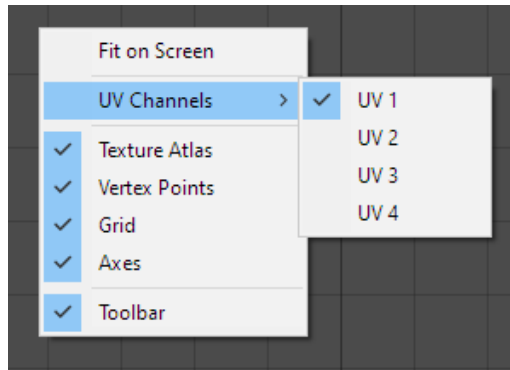


Figure 36

- **Fit on Screen** - Resizes the active canvas based on the current size of the viewport.
- **UV Channels** – Shows the UV channel that is currently active. If the mesh doesn't have the UV channel that is currently active, nothing will be drawn on the canvas.
- **Texture Atlas** – When toggled on, the MainTexture used by the selected object, is drawn on the canvas. If the selected objects material doesn't have a MainTexture, nothing will be drawn.
- **Vertex Points** - When toggled on draws the vertex points.
- **Grid** - When toggled on, the viewport background grid is drawn.
- **Axes** - When toggled on, the viewport X and Y axes are drawn.
- **Toolbar** - When toggled on, a toolbar is drawn at the top of the window.

4.3. Viewport Toolbar

At the top of the UV Inspector window there are 4 buttons and a dropdown menu, Figure 37. The buttons can be used to Enable/Disable the X and Y axes, Background Grid, Vertex Points and the Texture Atlas preview.

The dropdown menu is used to set which UV channel should be drawn.

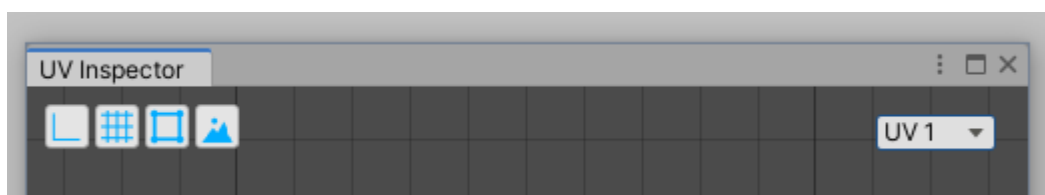


Figure 37

5. Rules and Tips

- A texture atlas should be referenced by only a single **Texture Grid** scriptable object.
- The changes you make to the texture are not automatically saved to HDD. This means that if you make some changes to the texture atlas, and do not save them, those changes will be lost when you close the Unity Project.
- If you have several texture atlases that are just color variations of one another, you don't need to create a Texture Grid (create Flat Color Grids and Texture Rects) scriptable object for all of them. You can create a Texture Grid for one texture atlas, duplicate it and replace the texture atlas it references.
- After you no longer need **Palette Modifier**, you can restore the original texture atlas format.
- If you add the **Palette Modifier** script to an object and notice that not all the object colors are in the inspector, most likely this is because in the **Texture Grid** not all flat colors are covered with a **Flat Color Grid**. Open the Grid Editor and make sure all the flat colors and texture patterns are covered with a **Flat Color Grid/Texture Pattern Rec**. After that go to **Misc** tab and press **Rebuild PM Data** button.
- **Break Color Sharing** works only on flat colors. If an object has both flat colors and texture patterns, PM will move the UVs to an unused part of the texture only for those UVs that point to a flat color.

6. Social Links

Forum Thread: <http://bit.ly/palettemodifier>

Discord Channel: <https://discordapp.com/invite/RCdETwg>

Email: johnq002@gmail.com

Video Tutorial: <https://youtu.be/fLf4WSjBPI>