Create a custom 3D puzzle using the 2D Puzzles actions

In this tutorial you will learn how to use the images produced by the PanosFX 2D Puzzles actions to create custom 3D puzzles in Photoshop CC and CS6 Extended.
**Introduction**

The PanosFX ‘Puzzle Effects’ Photoshop actions will turn your photos into impressive 2D or 3D jigsaw puzzles, letting you choose from a large array of different effects.

The 2D actions create a Photoshop image where each piece is an individual layer. For example the 210-pieces action creates 210 different layers (plus the ‘background’). Photoshop can handle all these layers easily. You can move and rotate each piece (or groups of pieces) independently.

Things are different when working with 3D scenes, though. Working with 3D in Photoshop is a very intensive task. A puzzle with 210 individual 3D pieces would be a huge drain on system resources. That’s why the current version of the 3D puzzles actions let you turn up to 20 pieces into individual 3D objects.

This number will likely cover the majority of your needs. What can you do if you wish to create a 3D puzzle that has more than 20 individual 3D pieces? This tutorial shows you how to turn a 2D Puzzle into a 3D scene.

**Create the 2D Puzzle**

Load an image and run one action from the **2D-PUZZLES** set. In my example I used the **56 pieces** action to create this 2D Puzzle:
**Make some decisions**

As mentioned in the introduction, turning each piece (layer) into an individual 3D object is not recommended. This would have a major impact on the overall performance and would likely cause Photoshop to crash.

You can select a few pieces instead, that will appear detached from the final 3D puzzle. Keep in mind that Photoshop’s 3D performance depends on your system configuration (CPU, graphics card, RAM, 64-bit OS, etc.). You may want to decrease the size of the original image prior to processing it with the 2D Puzzles actions.

Observe the 2D puzzle image and decide which pieces will be turned into individual 3D objects in the final scene.

At this point I suggest you collapse the layer styles in the Layers panel, in order to view more layers. To do so, hold down the **Alt** key ( **) or **opt** ( *) and click the **fx** arrow:

I remind you that a **column number** and a **row letter** identify each individual layer in the Photoshop image produced by the 2D Puzzle actions.

**Example:** Layer B1 specifies the piece in row B and column 1.

In my example the final 3D scene comprises from:

- One 3D object created from merging pieces **A1** and **B1**.
- Two individual 3D objects created from pieces **B8** and **G8** respectively.
- One 3D object created from all other pieces.
Prepare the 2D layers

To make the 3D puzzle more interesting, let’s merge layers A1 and B1 into a single layer. Move the mouse pointer over piece A1, right-click and select ‘A1’ in the pop-out window:

Now hold down the **Shift** key (this lets you select multiple layers in the layers panel, using your mouse). Move the mouse pointer over piece B1, right-click and select ‘B1’.

Check the Layers panel: you should see both layers A1 and B1 been highlighted (selected).

Press **Ctrl-E** (**cmd-E**) to merge them.

Select **Layer > Rename Layer** from the menu and rename the new layer to ‘A1 & B1’.

Finally click on the eyeball icon to the left of the ‘A1 & B1’ layer to turn off its visibility:

Click on the eyeball icon to the left of B8 layer, to turn off its visibility. Do the same for layer G8. Finally turn off the visibility of the ‘background’ layer.

*TIP: If you wish to detach more pieces in your custom 3D puzzle, turn off the visibility of the respective layers.*

Here’s how my puzzle looks, at this point:
Go to the Layers panel and select a layer that is visible (e.g. A2).

Choose **Layer > Merge Visible** from the menu, or press **Shift-Ctrl-E** ( ) or **Shift-cmd-E** ( ).

Rename the new layer to ‘Other pieces’ and drag it down in the layers panel, moving it above the ‘background’ layer:

![Image of layers panel]

Restore the visibility of all layers, by clicking the respective eyeball icons:

![Image of layers panel with all layers visible]

**Create the 3D objects**

Switch to the 3D Workspace by choosing **Window > Workspace > 3D** from the menu. The next steps will turn the 2D puzzle pieces into 3D objects.

Select layer ‘A1 & B1’ and choose **3D > New 3D Extrusion from Selected Layer** from the menu. This command will turn the piece into a 3D object. The default extrusion depth will likely be very big. We will decrease it by manipulating the object’s **Extrusion depth** value.

Go to the **Properties** panel, or right-click on the 3D piece. Move the **Extrusion Depth** slider to the left. The **secondary 3D view panel** on the upper left corner of your work area, lets you observe the change.

A value between 50 and 300 will be appropriate in most cases (the optimum value depends on the size of the original image).

**Please memorize or write down the value you used: you will apply the same extrusion depth to all pieces in the next steps!**

Go to the **Layers panel** and select the next 2D piece layer. Perform these two steps:

1. Select **3D > New 3D Extrusion from Selected Layer** from the menu.
2. Go to the **Properties** panel (or right-click on the 3D piece) and apply the same extrusion depth value as above.

Repeat these two steps for the all 2D puzzle layers (do not extrude the background).
Merge the 3D objects

Let’s tidy up the Layers panel. Hold down the Alt key or opt and click the 3D effects arrow, to the right of a 3D layer:

Select the first 3D layer (‘A1 & B1’ in our example). Hold down the Shift key and select the last 3D layer (‘Other pieces’ in our example). Now all 3D layers should be highlighted (selected) in the Layers panel.

Choose 3D > Merge 3D Layers from the menu. Rename the new layer to ‘3D puzzle’.

Manipulate the 3D scene

The technical part of the tutorial is over. All pieces have been converted into 3D meshes. From this point you can manipulate the 3D scene to your liking, using the various 3D tools. Let me show you what you can do:

Go to the 3D panel and click the third tab (Filter by: Materials).

Hold down Ctrl or the cmd key and select all Front Inflation Materials:

Go to the Properties panel and set the Shine slider to 100%:

The colors look better now.
Go back to the 3D panel. The third tab should be selected. Hold down the Ctrl key (\(\text{Ctrl}\)) or the cmd key (\(\text{cmd}\)) and select all Extrusion Materials:

Go to the Properties panel and click the arrow to open the material picker:

Scroll down and select a different material for the sides of the pieces. In my example I picked the ‘cork’ material:

Make sure that the 3D puzzle layer is selected in the Layers panel.

- If you have Photoshop CC go to the 3D Panel, click the first tab and then click on Scene. Then choose the command 3D > Group all Objects in Scene from the menu. Go to the 3D panel and click on Scene Objects. Finally go to the Properties panel.

- If you have Photoshop CS6 Extended go to the 3D Panel, click the first tab and then click on Scene. Go the Properties panel and click the second tab (Coordinates).

In the Coordinates tab set X angle to 90 degrees. This will make the puzzle parallel to the ground plane.

Choose Move Object to Ground Plane from the menu, to snap the puzzle to the ground.
In the **3D panel** click the first tab and select ‘**Current View**’:

![3D panel with Current View selected]

Make sure the **Move tool** is selected (press **V**). Use the various 3D tools in the toolbar to manipulate the angle of view with your mouse:

![Move tool in 3D panel]

Click the top-left 3D piece (**A1 & B1**). The 3D axes show up. Use them to reposition the 3D object to preference. For maximum control you can change the values in the X, Y, Z fields in the ‘**Coordinates**’ tab of the **Properties panel**.

![3D axes with coordinates]

Use the axes to change the position of all detached pieces to preference (in our example: ‘A1 & B1’, ‘B8’, and ‘G8’).

Finally go to the **3D panel** and click the fourth tab (the light bulb icon). Change the direction of the light source to your liking. Go to the **Properties panel**, click the first tab and increase the **Shadow Softness** to 70%.

You may also go back to the **3D panel**, click on **Environment**, and can experiment with manipulating the various settings in the **Properties panel**.

When you are done select **3D > Render**. Rendering takes a while to complete.

The final 3D Puzzle will pay off the effort you put to create it. Of course you can always use the ‘3D Puzzles’ actions which will do the job in a few seconds.

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