

Exercise 17 : Volume Render Creating a Merged Image

The Volume Render Merge Tool allows images generated with different render types to be merged into a single image providing users with the ability to create unique visualizations of their image data. This exercise will demonstrate how to use the Merge Tool to create a unique rendering of the brain and ventricles.

Creating the First Image

1. Load the **MRI_3D_Head.avw** data set from the **\$(\BIR\images\TutorialData** directory.
2. Open the **Volume Render** module (**Display > Volume Render**).
3. Choose **File > Load Object Map** and load the **MRI_3D_Head.obj** object map from the **\$(\BIR\images\TutorialData** directory.
4. Open the **Preview** window (**Generate > Preview**).
5. Open the **Rotation** window (**Generate > Rotation**). In the Rotation window select **Named** and then select **Right**. Note that after this point you will not be able to reposition the data.
6. Open the **Objects** window (**View > Objects**) and set the '**Control by**' option to '**Attribute**'. Set the **Display** attribute to **Off** for all objects except the Ventricle (figure 1).
7. Next we will use some of the additional rendering options to generate a rendering of the ventricle. Open the **Specular Reflection** tool and **Light** tool from the **Type Specific** menu (**Generate > Type Specific >**).
8. In the **Specular Reflection** tool set the following parameters (figure 2):
 - **Specular Reflection to On**
 - **Factor to 0.32**
 - **Exponent to 0.1**
9. Use the Light tool to brighten the image display by moving the Brightness slider to the right (figure 3).
10. Once these parameters are set, click the **Render** button in the main Volume Render window.

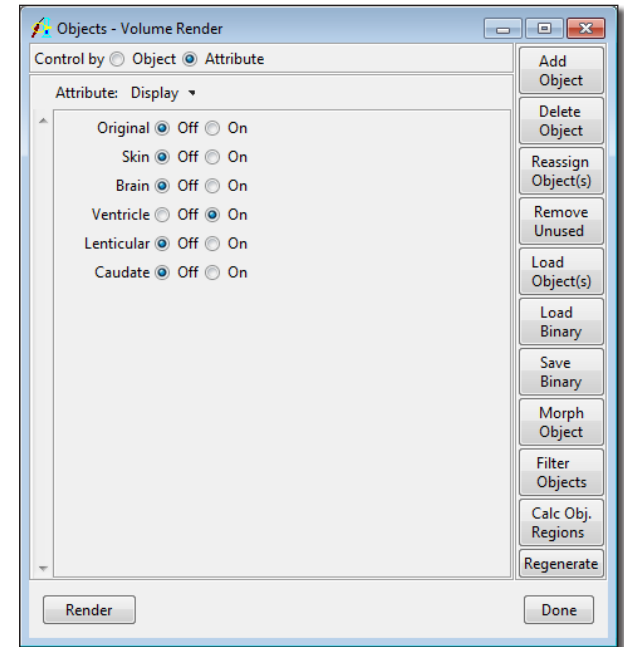


Figure 1

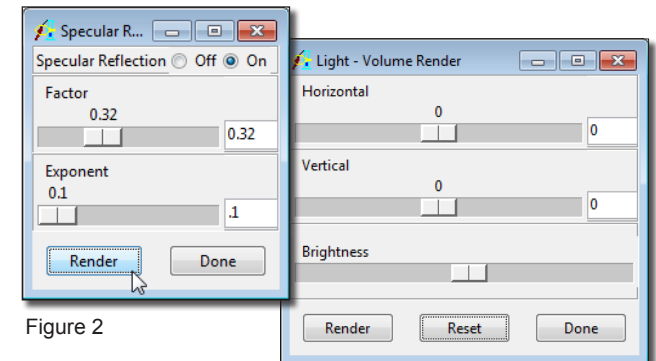


Figure 2

Figure 3

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- Next open the **Merge** tool from the Tools menu (**Tools > Display > Merge**).
- The current rendering will be displayed in the 'Current' port. Click the '**Current to Previous**' button to copy the current rendering over to the 'Previous' port (figure 4).

note | If you wish to return to this point at a later time, save the rendering by right-clicking in the 'Previous' port and select the 'Save Previous' option.

Creating the Second Image

- In the **Objects** window, switch the display of the **Ventricle** to **Off** and the display of the **Brain** to **On**. Next, change the Attribute from **Display** to **Color** and change the Brain color from **Pink** to **White** (figure 5).
- Open the **Render Type** window (**Generate > Render Type**) and set the **Render Type** to **Surface Projection** (figure 6).
- Next, open the **Surface** option from the **Generate > Type Specific** menu. In the Surface option set **Skip** to **2** and **Thickness** to **6** (figure 7). Note the display of the brain from the Preview window.
- Once these parameters have been set, click on the **Render** button in the main Volume Render workspace.
- The 'Current' rendering in the Merge Tool will update.

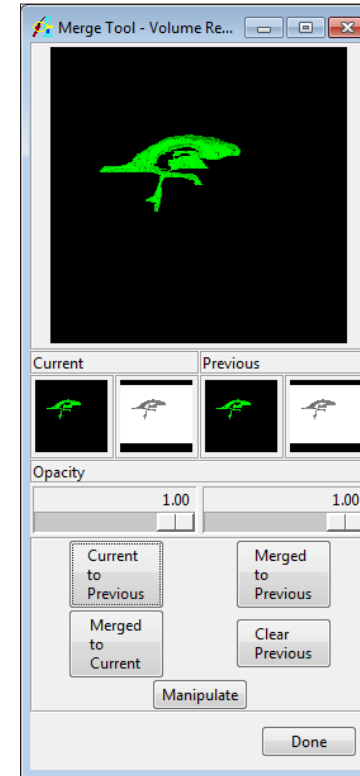


Figure 4

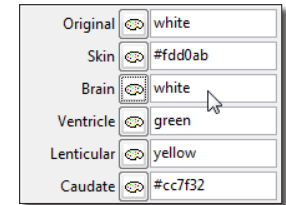


Figure 5

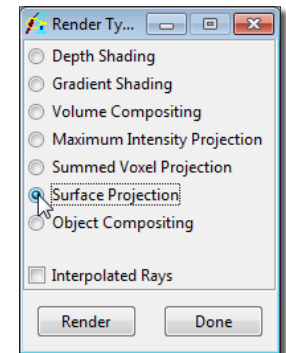


Figure 6

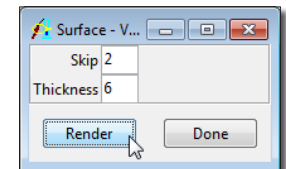


Figure 7

Merging the Images

- Right-click on the main image display window in the Merge Tool, set the Merge Type to **Average** (figure 8). Note the updated display. Right-click and set the Merge Type back to **ZBuffer Depth**.

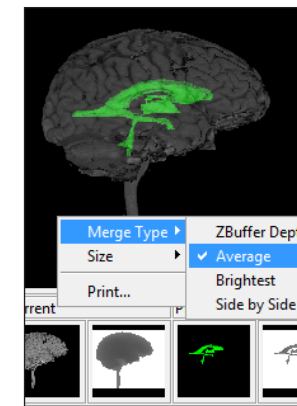


Figure 8

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19. Decrease the 'Opacity' value of the current rendering by moving the Opacity slider bar under the current rendering to the left. An Opacity of 0.32 works well (figure 9).
20. Next, click the **'Merge to Current'** button.
21. To save the rendering, select **File > Save Renderings**. In the **Save Renderings** window, change the Name to 'Merged Image' and then click on the **'Save Last Rendering'** button.
22. The following window may be displayed (depending upon the render options you set).

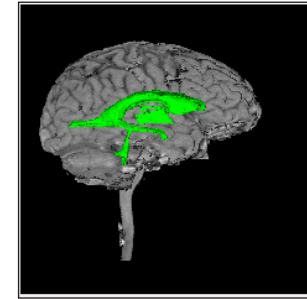
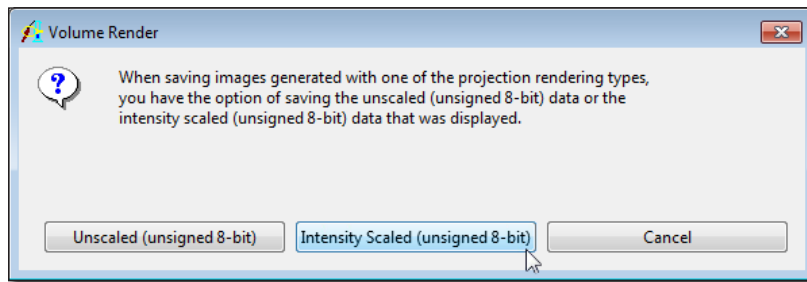


Figure 9

23. Select the **'Intensity Scaled (unsigned 8-bit)'** option. The rendering will be saved to the Analyze workspace and can be saved out of Analyze as a .jpg, .tiff, or .bmp using the Save module.
24. Close the Volume Render module before proceeding to the next exercise.