Volume Render: Basic Rendering Controls

The Volume Render module provides a variety of display representations for three-dimensional image data sets. Also provided in the module are tools for volume image editing and measurement. This exercise will demonstrate the different control parameters involved in the process of volume rendering. This includes demonstrating various rendering algorithms that are part of the suite of techniques used to render volume images with Analyze.

1. Load the **Cubic_CT_Head.avw** data set from the **$:\BIR\images\TutorialData** directory.

2. Open the **Volume Render** module (**Display > Volume Render**).

3. Press the **Render** PowerBar button or choose **Generate > Render**.

4. Open the **Preview** window (**Generate > Preview**).

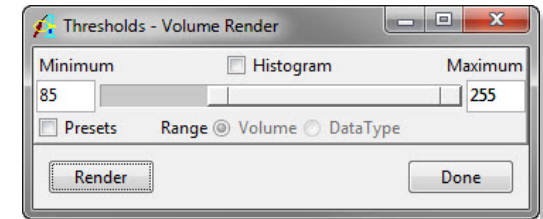5. To rotate the image data in this window, click and drag the mouse.

Thresholding Data

6. Open the **Thresholds** window (**Generate > Thresholds**).

7. Set the **Threshold Minimum** to **85** (figure 1) - all voxels with a value less than 85 are now removed from view.

8. The resulting image can be seen in the Preview window (figure 2). Click **Render** to display the rendering in the main Volume Render window.

9. Now, set the **Threshold Minimum** to **145**—all voxels with a value less than 145 are now removed from view. Click **Render**.
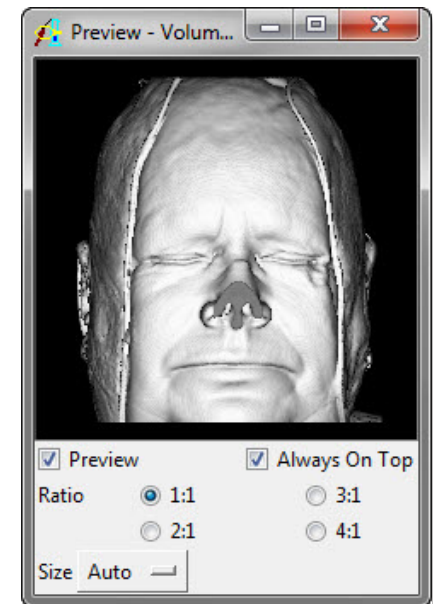

Figure 1

Figure 2

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Rendering Algorithms

10. Open the **Render Types** window (Generate > Render Type) (figure 3).

11. Experiment with the rendering algorithms.

12. Select the **Depth Shading** option. View the rendering in the Preview window. Click **Render** to display the rendering in the main Volume Render window.

note   When working with anisotropic data, the 'Interpolated Rays' option may help to improve the quality of the rendering.

13. Select the **Volume Compositing** option. View the rendering in the Preview window. Click **Render** to display the rendering in the main Volume Render window (figure 7). For more information on the Volume Compositing Tissue Map Type Specific option, please review exercise 13, **Volume Render – Tissue Map Tool**.

14. Select the **Maximum Intensity Projection** option. Click **Render** to display the rendering in the main Volume Render window.

15. Select the **Summed Voxel Projection** option and click **Render.**

16. Select the **Surface Projection** option. Set the **Threshold Minimum** back to **145** in the Thresholds window, then click **Render**. This render type is more effective with different input data, but the effect can be seen using the current surface.

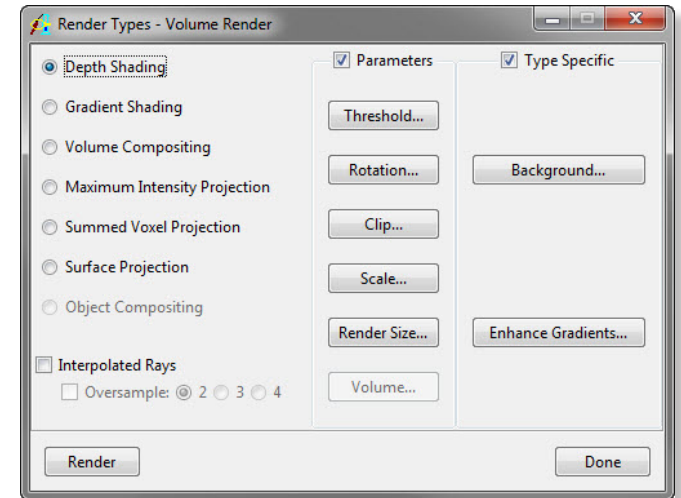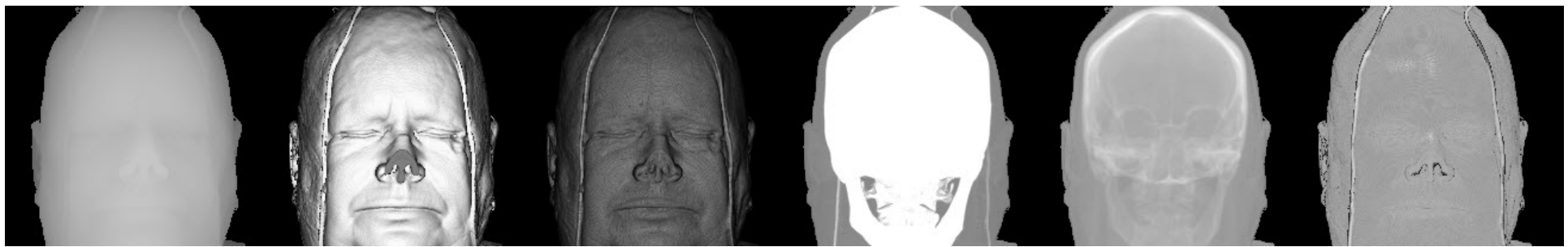17. Select **Gradient Shading** before moving to the next section.

Figure 3

note   Additional parameters for each render type are available in the Render Types window. Upon clicking on each Render Type, notice that type specific parameters will either become enabled or disabled depending on whether the parameter is supported.

| Depth Shading | Gradient Shading | Volume Compositing | Maximum Intensity Projection | Summed Voxel Projection | Surface Projection |

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Clip Tool

18. Open the Clip tool from the **Render Type** window or from (**Generate > Clip**).

19. The Clip tool (figure 5) allows a subregion of the volume to be rendered. Experiment with the **Clip Plane** and **Clip Volume** parameters.

20. Click **Done** to close the Clip tool.

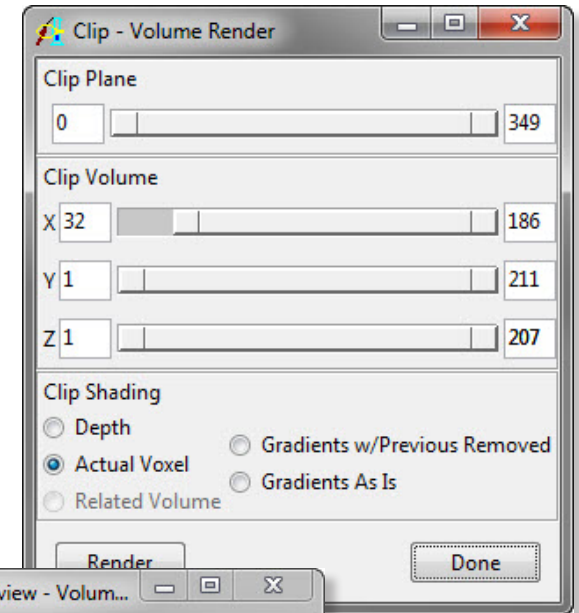21. Close all windows related to the Volume Render module before moving onto the next exercise.
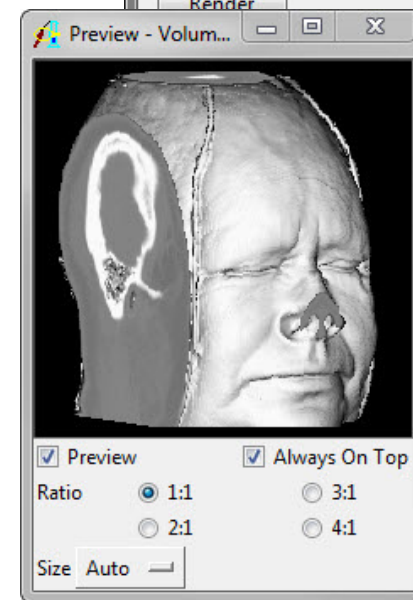

Figurre 5

Figure 6

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