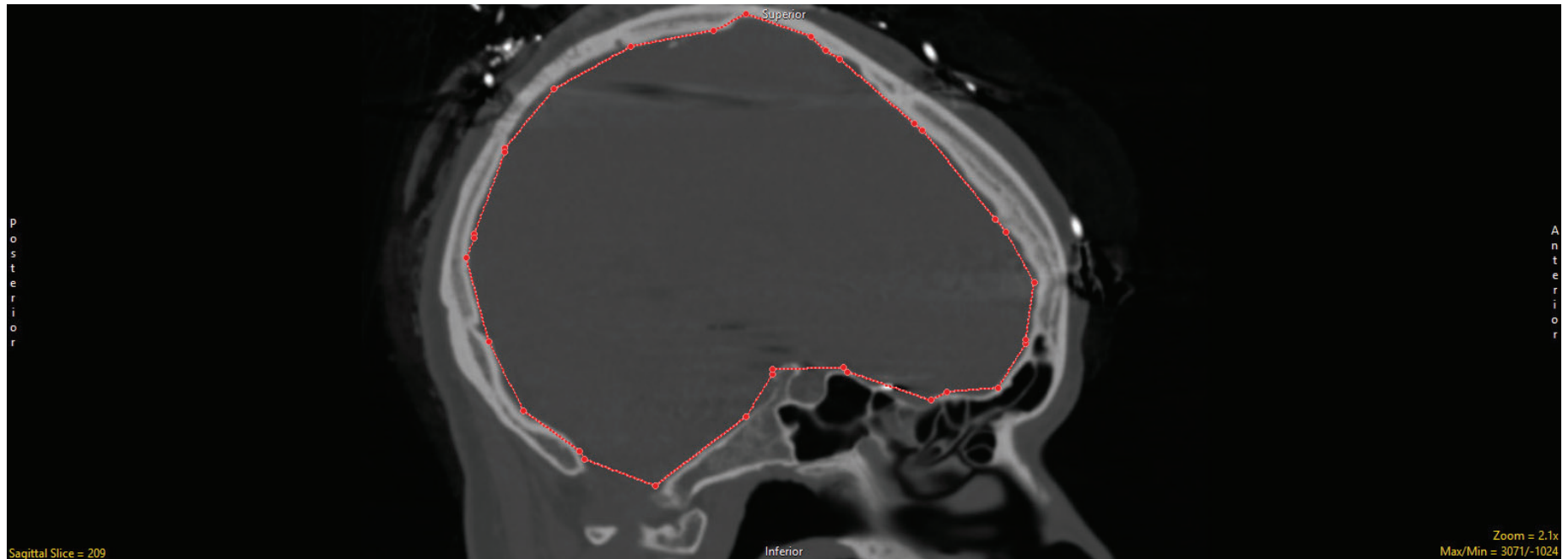


## Polygon Trace

The Polygon Trace tool enables the definition of a closed polygon region.



The following options are available:

**Reset Polygon Trace after Apply:** Resets (deletes) the polygon trace after the region is defined. Polygon traced regions are defined after the user double-clicks or presses the escape (Esc) key to close the trace ending the tracing process, the trace is applied when the Apply button is clicked, the 'A' key on your keyboard is pressed, the user right-clicks on the spline trace and selects Apply from the menu or the Auto Apply option is enabled.

**Auto Apply:** When selected the polygon trace is automatically applied once the user double-clicks or presses the escape key to close the trace.

## Polygon Trace Options

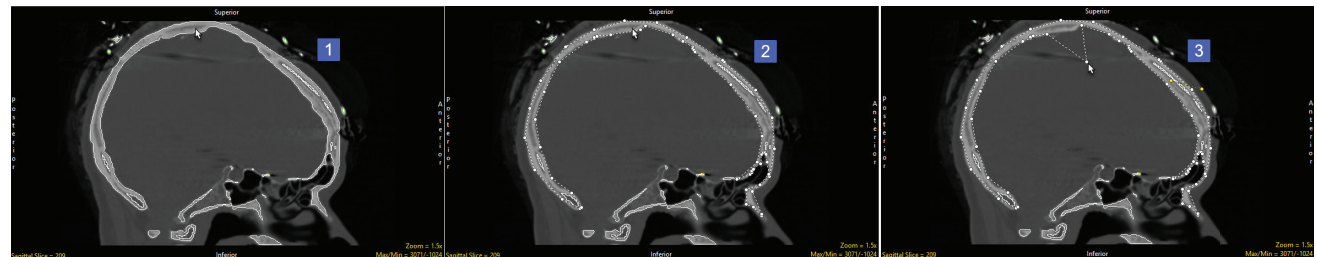
**Auto Advance:** The auto advance option automatically moves users to a new slice, as defined by the auto advance options, once the current edit is defined. Note the auto advance will occur after the user releases the left mouse button and the edit is applied to the current slice. The auto advance option is a productivity tool allowing users to move through the image data without having to move the cursor from the current orientation window that regions are being defined on. The following options are available.

- Off: Off is the default option for auto advance. When off is selected auto advance is disabled.
- Forward: Specifies that auto advance will move forward through the image data (slice number increases).
- Backwards: Specifies that auto advance will move backwards through the image data (slice number decreases).
- Increment: Specifies the number of slices the auto advance will move forward or backwards.

**Right click options:** Right clicking on the Polygon trace provides users with the following options:

- Apply: Applies the trace.
- Cancel: Cancels the trace, deleting the trace and controls points.
- Auto Apply on Control Point Adjust: This option is only available when Auto Apply is enabled and when editing a Polygon trace or trace converted to a Polygon. When selected any edits made to the Polygon will be automatically applied when a control point is moved.
- Delete Control Point: Deletes the control point the cursor is currently over.
- Delete Spline: Deletes the trace and controls points.

Note: Clicking on an object border [1] when the Polygon Trace is selected will convert the object region into a polygon [2] with adaptable control points [3].

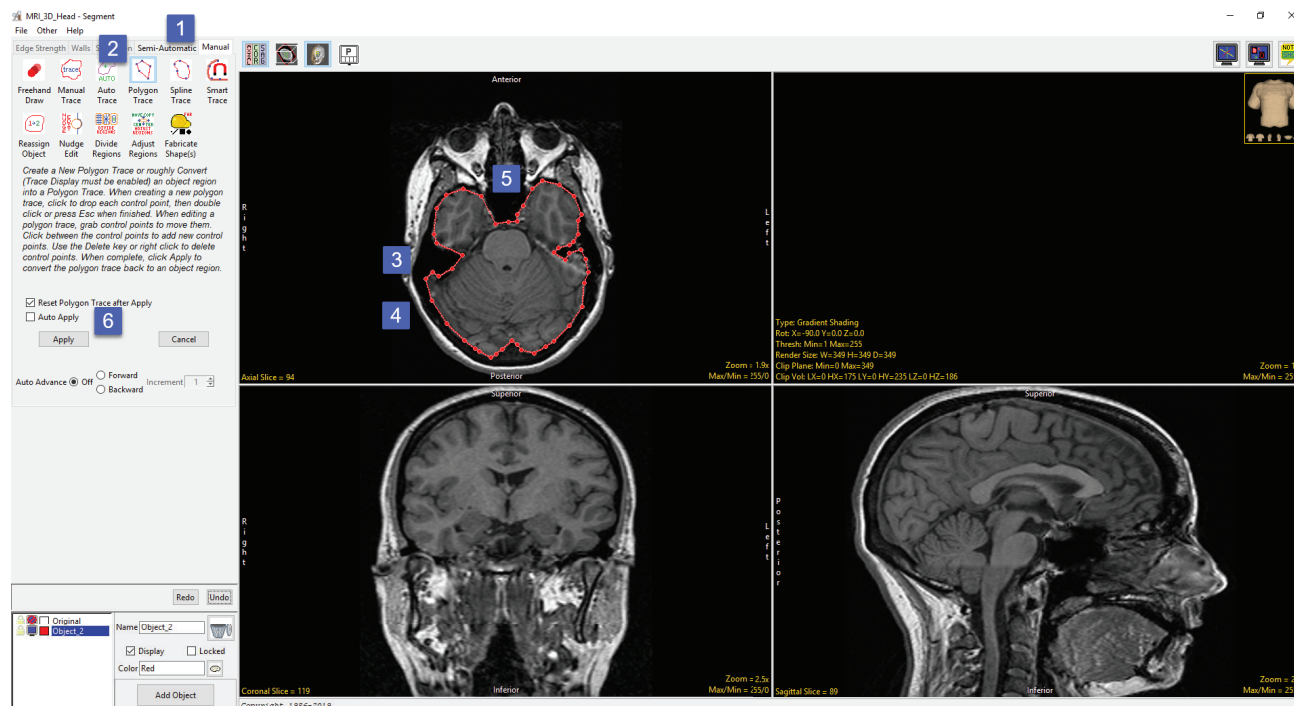


## Region Definition and Region Modification with Polygon Trace

Here we will use the Polygon Trace tool to define a region of interest and then how to divide a region into subregions.

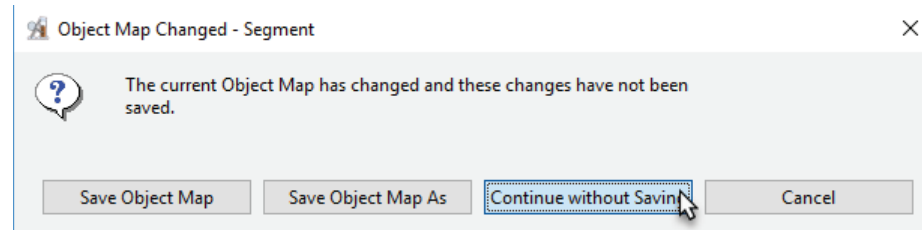
To follow along, download the data set MRI\_3D\_Head from [analyzedirect.com/data](http://analyzedirect.com/data) and load into Analyze using Input/Output.

- Select the data set and open Segment.
- Select Manual [1] and choose Polygon Trace [2].
- To define a Polygon trace around the brain in the axial image, left click on the image to set the first control point [3] and then move the cursor and left click again to set a second control point [4].
- Continue in defining the border of the brain in this manner until complete [5]. Double-click or press the Esc key to end tracing and then process Apply [6] to define the region.

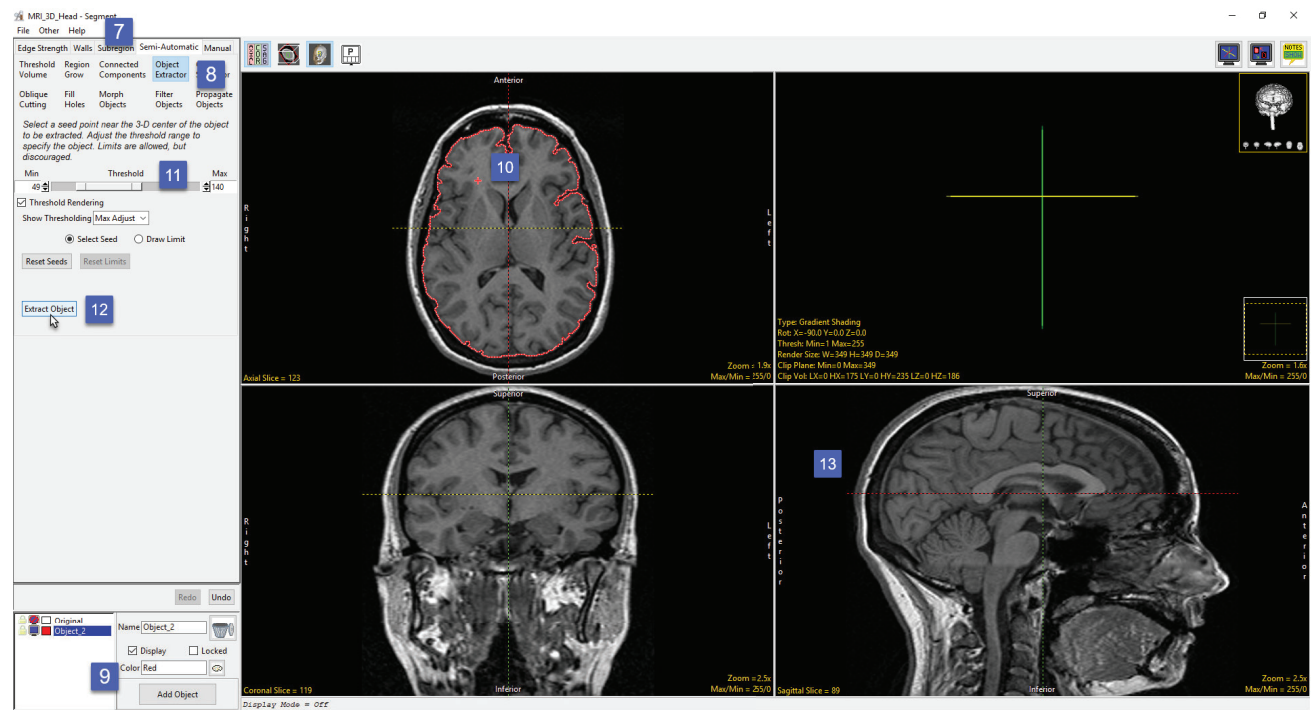


## Region Definition and Region Modification with Polygon Trace (continued)

- Select File > Reset Object Map to delete the trace, select 'Continue without Saving' when prompted.

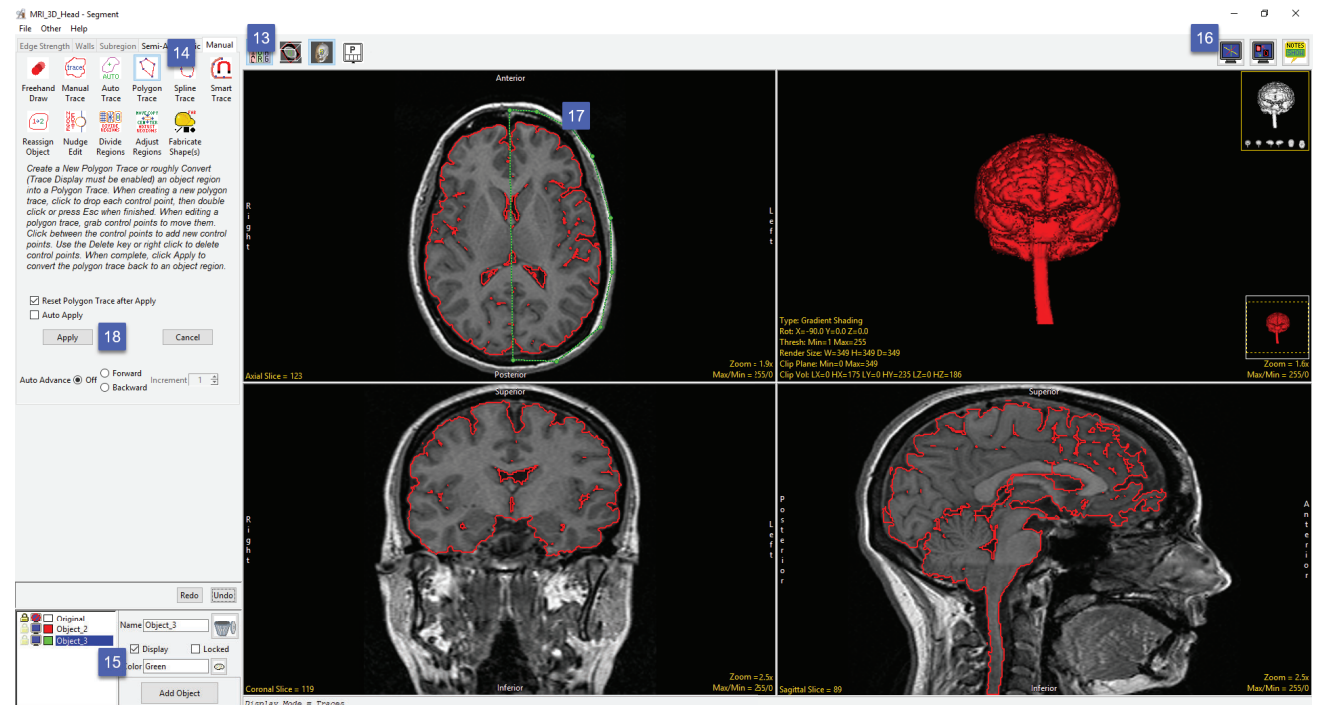


- Next, segment the brain in 3D using the Object Extractor. Select the Semi-Automatic tab [7] and then choose Object Extractor [8].
- Click Add Object [9] to add an object to the object list and then click in the white matter on axial slice 123 to set a seed point [10].
- In the Threshold option set the minimum threshold value to 49 and the maximum to 140 [11] and then click Extract Object [12].



## Region Definition and Region Modification with Polygon Trace (continued)

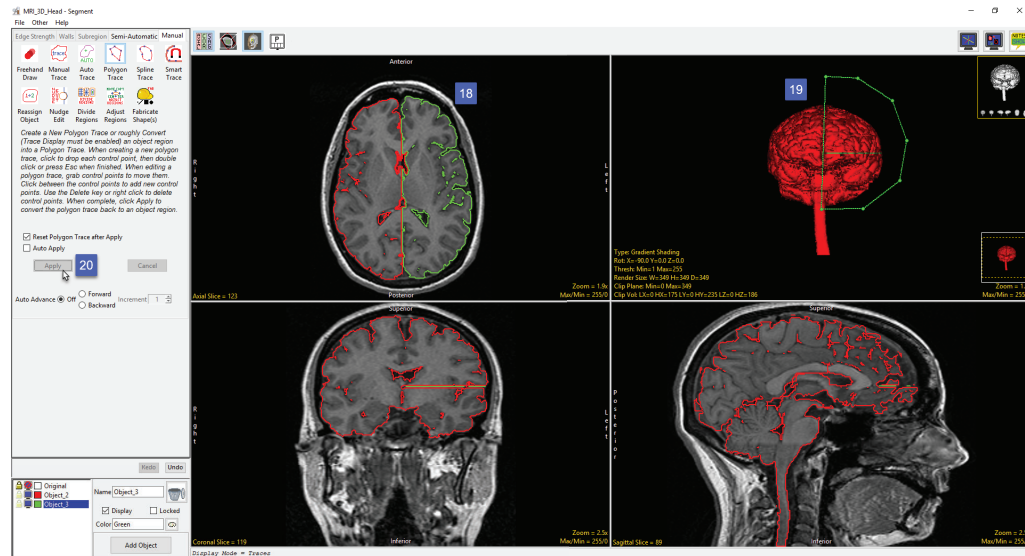
- To subsegment a 2D region do the following. Select the Manual tab [13] and then choose the Polygon tool [14]. Lock the Original object and then add a new object to the object list [15].
- Switch off the Linked Cursor [16] and then use the Polygon tool to define the left hemisphere of the brain on axial slice 123, [17] and then click Apply [18].





## Region Definition and Region Modification with Polygon Trace (continued)

- The brain on slice 123 has been split into two objects representing the left and right hemisphere [18].
- The Polygon trace tool can also be used to edit 3D objects. To subsegment a 3D region define a Polygon trace over the left hemisphere of the brain in the Rendering window [19] and then click Apply [20].



- All voxels not assigned to a locked object within the trace (and all voxels along the ray path) have been assigned to the selected object [21].

