The modeling procedure shown below is a slight variation of one developed by Dave Teich, Mind of the Machine, when he had to do an illustration on “Apples and Oranges” for an article on Cross Platform File Sharing in Digital Video Magazine. “I translated the concept graphically as an apple and an orange unpeeling and the peels morphing into one another.” Dave’s final image is shown to the right.

1. On the YZ (front) plane, draw an open arc (semi-circle).
2. Use the Object of Revolution tool to revolve the arc 4 times about the Z axis.
3. With the XY Reference Plane active, use the Sections tool to derive 24 contour lines (in the Section Options dialog, select Contours, Use # Of Increments, and enter 24 in its field).
4. Viewed from Front, your contours should have a circular shape.
5. Ghost the lower half of the contours so that they do not interfere with your drawing.
6. Select the Top (XY) projection and with Snap to Point active, draw as shown. Start drawing on the innermost square and, at each step, move to the next point of the next rectangle.
7. Go to the Front view, Unghost the lower half of the contours and Ghost the upper half. Note that the middle contour stays active at all times.
8. Go to the Top view, and by snapping to points, draw another vector line, starting where the previous ended and moving toward the inner square.
9. You now have two separate vector lines. Join them using the Line Edit tool with the Join operation selected.
10. Draw a surface object to the left of your rectangular spiral. You will use it to derive a mirrored copy.
11. In the Reflection Options dialog select About A Surface and set the Self/Copy mode to Copy. With the Mirror tool active, select the spiral line and the surface to its left. You now have a mirrored copy.
12. With the Direction tool and Reverse Direction selected in its dialog, click on the copy to reverse its direction. You can also delete the surface object you used as a plane of reflection. Then draw two single segment lines by snapping to the endpoints of your spiral shapes. Make sure you draw them in directions consistent with the other lines. Use the Line Edit tool to join the four pieces into one (when you join the last two pieces remember to also select Close Line Sequence in the Line Editing dialog).
13. Use the C-Curve tool to generate a smooth curve (the default selections in the Controlled Curve Options dialog will do fine).
14. Draw a source shape (single line or very narrow enclosure). With the Sweep tool select the source shape and the double spiral path you created previously. In the Sweep Preview dialog you may want to adjust the exact position of the source shape to produce the result you want.

This procedure was developed before form•Z 2.6 introduced a number of direct ways for generating spirals. Would one still want to use it now that the spiral tools are available? The answer is yes, which is why we publish it here. While the new spiral tools are capable of generating a large variety of spirals, there will always be modeling cases where the exact form desired must be drawn in detail. The procedure shown here also offers a good example of how arbitrary 3D shapes can be drawn by using other shapes as construction lines.