Overview

Igor can create various kinds of 3D graphics including:

- **Surface Plots**
- **3D Scatter Plots**
- **3D Bar Plots**
- **Path Plots**
- **Ribbon Plots**
- **Isosurface Plots**
- **Voxelgram Plots**

Image Plots, **Contour Plots** and **Waterfall Plots** are considered 2D graphics and are discussed in other sections of the help.

Igor's 3D graphics tool is called "Gizmo". Most 3D graphics that you produce with Gizmo will be based on data stored in waves. It's important to understand what type of wave data is required for what type of 3D graphic, as explained in the following sections explain.

1D Waves

1D waves can not be used for 3D plots.

If you have three 1D waves that represent X, Y and Z coordinates which you want to display as a 3D plot, you must convert them into a triplet wave. For example:

```
Concatenate {xWave,yWave,zWave}, tripletWave
```

Now you can plot the triplet wave using one of the methods described below.

The conversion of three 1D waves into a triplet wave is appropriate when the data are not sampled on a rectangular grid. If you know that your data are sampled on a rectangular grid you should convert the wave that contains your Z data into a 2D wave using the Redimension operation and then proceed to plot the surface using the 2D wave. You can perform this conversion, for example, using the commands:

```
Duplicate/O zWave, zMatrixWave
Redimension/N=(numRows,numColumns) zMatrixWave
```

2D Waves

A 2D wave, sometimes called a "matrix of Z values", is an M-row by N-column wave where each element represents a scalar Z value. You can apply wave scaling (see **Waveform Model of Data** on page II-62) to associate an X value with each row and a Y value with each column.

2D waves can be displayed as 3D graphics in **Surface Plots** and **3D Bar Plots**.

(2D waves can also be displayed as 2D graphics in **Image Plots**, **Contour Plots**, and **Waterfall Plots**.)

Triplet Waves

A triplet wave is an M-row by 3-column wave containing an XYZ triplet in each row. The X value appears in the first column, the Y value in the second and the Z value in the third. A triplet wave is a 2D wave interpreted as containing X, Y and Z coordinates.

Triplet waves can be displayed as 3D graphics in **3D Scatter Plots**, **Surface Plots**, **Path Plots** and **Ribbon Plots**. In a surface plot the triplet wave defines triangles on a surface.

(Triplet waves can also be displayed as 2D graphics in **Contour Plots**.)