CHAPTER 3

REFERENCE GUIDE TO CONTOURS

CHAPTER OVERVIEW

This chapter describes Contours commands under their menu headings. Edit menu commands help you copy, cut, paste images or undo the last command. You can use File menu commands to open or close a file, print it, or save it. Goodies menu commands redraw an image to correct errors or change perspective, and its zoom commands help you work with parts of a contour. The Plot menu commands select one of three types of contours, display a grid to delineate data parts, and toggle the order of 3D surface displays. Figure 3.1 illustrates the four Contours menus.
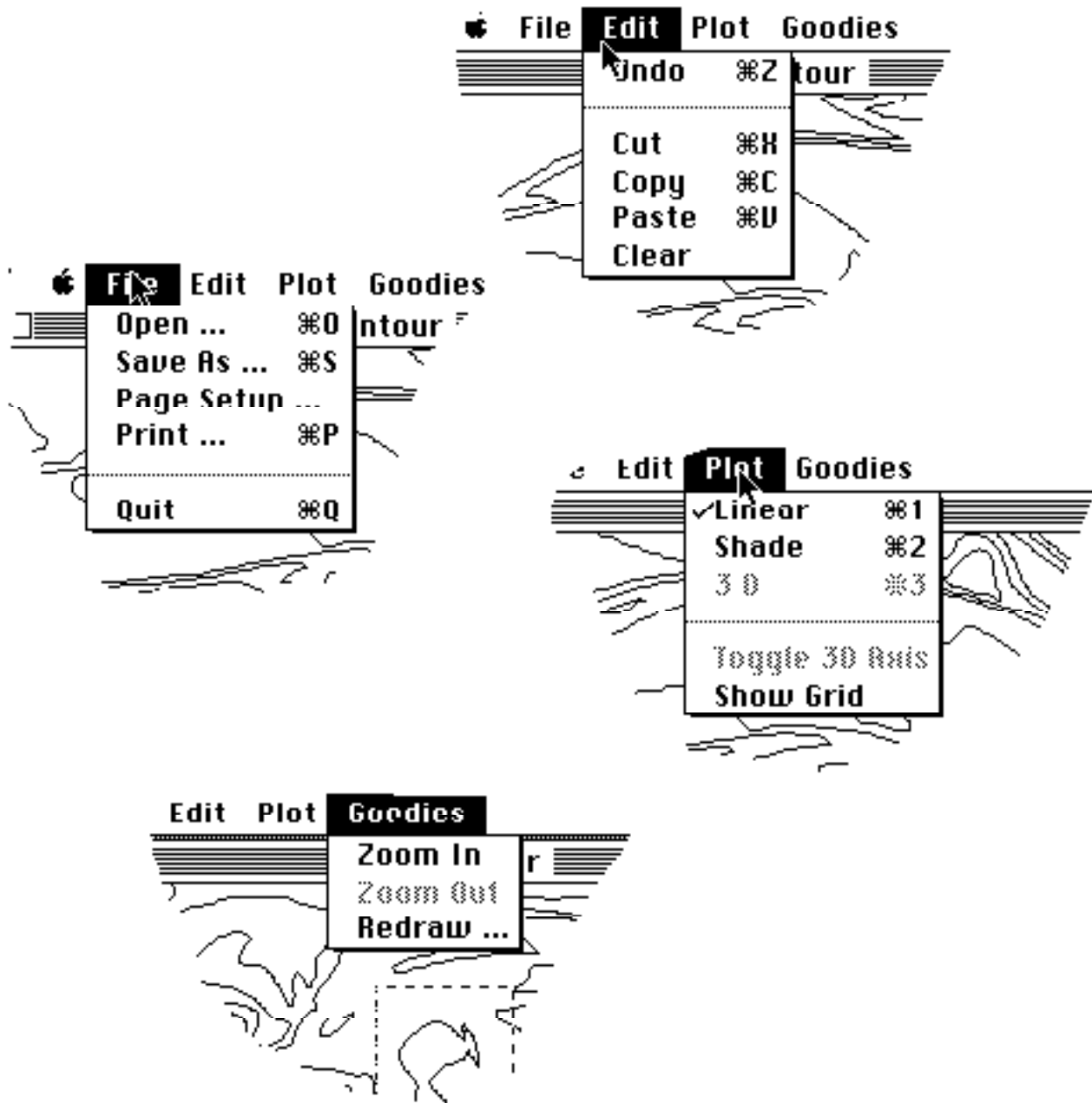
File Edit Plot Goodies

Undo   ⌘Z tour

Cut   ⌘X
Copy   ⌘C
Paste   ⌘U
Clear

File Edit Plot Goodies

Open ...   ⌘O ntour
Save As ...   ⌘S
Page Setup ...
Print ...   ⌘P

Quit   ⌘Q

Edit Plot Goodies

✓Linear   ⌘1
Shade   ⌘2
3 D   ⌘3

Toggle 3D Axis
Show Grid

Edit Plot Goodies

Zoom In
Zoom Out
Redraw ...

Figure 3.1 Contours Menus and Their Commands

THE EDIT MENU

Only the `Copy` command is active on this menu. If you select a rectangle in a 2D plot and execute this command, the specified rectangle will be copied onto the Clipboard. Alternatively, if no rectangle is selected, the whole 2D or 3D image is placed on the Clipboard.

When a rectangle is selected, the `Copy` command changes to become `Copy Selection` to inform you that only the selected region will be copied onto the Clipboard.

`Cut`, `Copy` , `Paste` and `Undo` are commands used for compatibility with any desk accessory that you may invoke and that uses these commands.

THE FILE MENU

Open

This command is active only when you have not already selected a raster file to display. `Open` displays the standard dialog box in which you select the desired raster file. You then enter your specific choices in the dialog box for:

- the dimensions of the data matrix
- the left and top most coordinates in the data set, where the plotting will begin (the X and Y axes)
- the magnification of the plot (a value of 1 is used for no expansion)
- the number of different contour levels in the plot
- the range of values in the data set

Once you enter all the required parameters, click on the `OK` button. The program checks for invalid data, such as non-numeric data or numbers that are out of range. If invalid data is entered, the `OK` button is disabled. Once the invalid data is corrected, the button is enabled again.

If all the parameters are valid, the program displays a new window together with the required linear plot at the specified magnification (this may take some time). The program always defaults to printing a linear contour plot at startup.

Page SetUp

This displays the standard dialog box to specify printing characteristics.

Print

This command prints the actual linear or shaded plot using the device specified by the Chooser desk accessory. Either a portion you have highlighted or the whole image is printed. This command can only be activated when you are using a 2D plotting mode. The image printed out is magnified to as large a value as will fit on the paper.

When you select a rectangle, this command changes to `Print Selection` to inform you that only the selected region will be printed.

Quit

Select this command to end your Contours session.

Save As

Choosing this command brings up the usual Macintosh `Save` box. Specify the filename for your plot, and it is saved in PICT format. This file can later on be read from other object-oriented (as opposed to bit-map) graphics packages such as SuperPaint or CricketDraw.

THE GOODIES MENU

Redraw

You can use the `Redraw` command to change the parameters you specified initially with the `Open` command on the File menu. This command brings up the standard dialog box as for the `Open` command. When you enter new choices, the current file is redrawn using the new parameters.

Zoom In

This command is used only in 2D plotting modes and is active when you have selected a rectangle. It zooms into the region specified by this rectangle, recalculating the magnification of the displayed image as required.

Zoom Out

The reverse of `Zoom In` is also active only in the 2D plotting modes. You activate this command when instead of selecting a rectangle on the contour plot, you click a point on the image. Then, if you select the `Zoom Out` command, the magnification of the image will be halved and the new display will be centered on the point you clicked.

Contour Levels . . .

This command is highlighted only when a linear plot is drawn. Contour levels can either be evenly spaced, in which case you specify the number of contour levels and the upper and lower contour level limit, or you can simply specify type in a series of increasing numbers, separated by space(s), each number representing a contour level.
The maximum allowable number of contour levels is 40.

THE PLOT MENU

Linear

Choosing the Linear command causes the active window to display a linear contour plot. Because it is the default plotting routine used by Contours, you select this type of plot only when you have previously displayed the data as a shaded or 3D image. This plot displays the data set as a number of contour levels. An example of a linear plot appears in Figure 2.1.

Shade

Data points are represented on the screen as an intensity in this method of plotting. The intensity varies directly with the value of the data points. Figure 2.2 shows a shaded plot.

Show Grid

The command displays a grid on top of the 2D plot to delineate each data point. This command is active only in a 2D plotting mode. Each square of the grid has dimensions of 5 x 5 data points.

3D

A three-dimensional surface plot of the data points is drawn when this command is chosen. You can then use the cube at the left of the screen to display different parts of the 3D surface or rotate the 3D surface. Figure 2.3 illustrates a typical 3D image and the rotation cube with which you can change its perspective.

Toggle 3D Axis

This command toggles the method of displaying 3D surface plots. The order in which each slice of the 3D surface is displayed is reversed when you select this command. Figure 3.2 shows two surface plots ; the Toggle 3D Axis command gives the right-hand image a slightly different perspective.
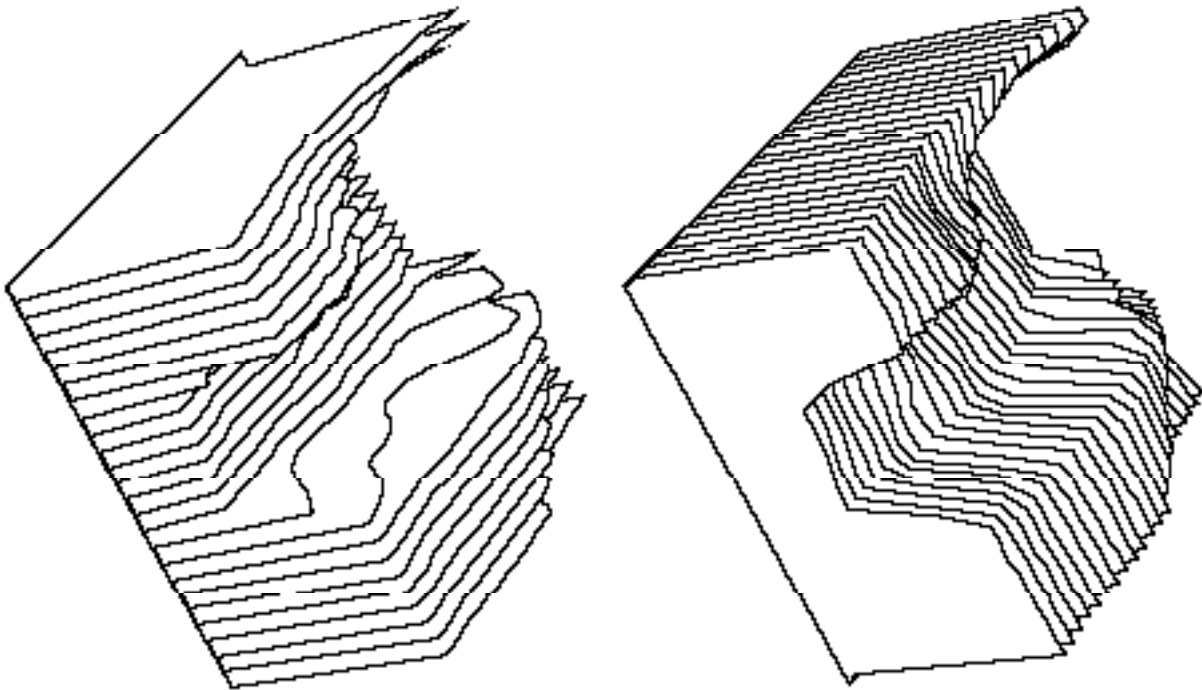
Figure 3.2. Two 3D Surface Plots that Represent the Same Image

CHAPTER SUMMARY

This chapter summarizes the Contours commands of the Edit, File, Goodies and Plot menus. The Edit menu copies your image to and from other software via the Clipboard. The File menu helps you start and end a Contours sessions, save your images or print them via the Clipboard. The Goodies menu commands redraw or zoom images so you can correct errors or work with parts of a contour. And the Plot menu commands help you choose the style of contour for your raster file file, display a grid as you plot data points, or change the slices of your contour.

The key points of this chapter are:

- Use the File menu to start and quit Contours, as well as print or save a file.
- Use the Edit menu to port images to other software via the Clipboard. Its `Undo` command will delete the last change you made.
- Use the Goodies menu to work with parts of a contour, correct it, or select a rectangle within the image to expand or reduce.
- Use the Plot menu to delineate data points with a grid or to select the style of contour.