

4. MANIPULATING THE SKETCH

The first part of this chapter explains how the Sketch display works and how to move to, and/or change the scale of, different parts of a Sketch window. It also gives some general information about using the Sketch window. The second part tells you how to keep track of which region of a Sketch a window is viewing.

Displaying Parts of a Sketch

Using the Sketch Display

Each sketch has a world coordinate space, which is similar to a sheet of graph paper. The position of each sketch element (such as a line or circle) is given by numeric values in this space. For example, the sketch below has a collection of five elements with coordinates between 0 and 200. The coordinate system for a sketch extends indefinitely in both positive and negative directions.

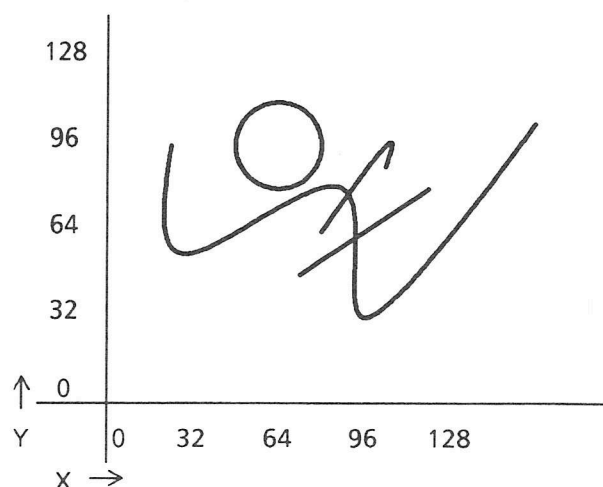
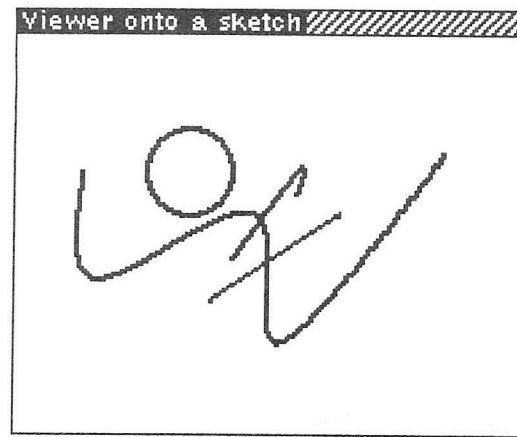


Figure 4-1. A sketch and its coordinate system

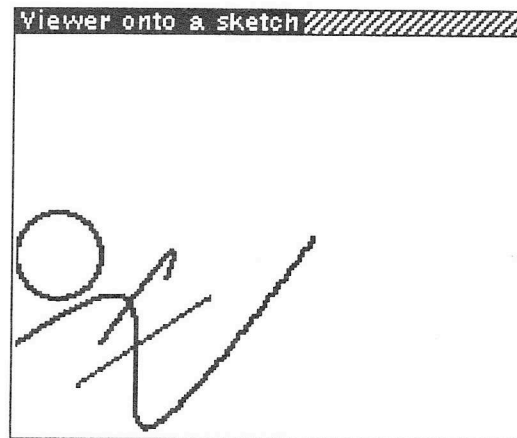
A sketch is viewed and edited inside a window. A window shows a region of the coordinate space of a sketch and displays any of the elements or pieces of elements that are in that region. The region is determined by the window's scale, its size, and the values of its left and bottom coordinates. If a window has a scale of 1.0 and left and bottom coordinates of 0, it is said to be in the *home position*. This is where all Sketch windows are positioned when they are created. Figure 4-2 shows a window onto the example sketch in its home view.



scale = 1.0
left = 0
bottom = 0

Figure 4-2. A sketch and its home view

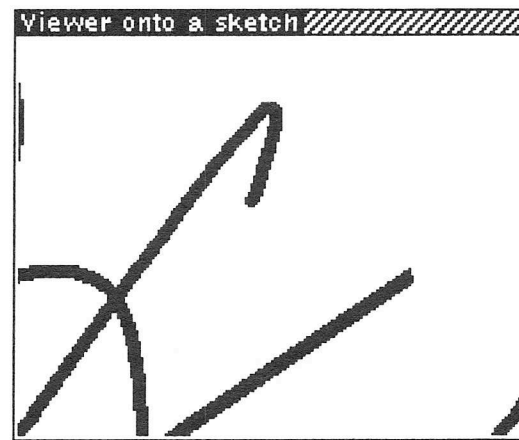
There are two ways you can move around in the sketch coordinate space. The first is to scroll the window, which changes the values of the left and bottom coordinates. Figure 4-3 has been scrolled down and to the left.



scale = 1.0
left = 80
bottom = 64

Figure 4-3. A scrolled view

The second way to move around in a sketch is to use the **Move view** command, which can also be used to change the scale of the display. Finally, you can just change the scale by using the **Autozoom** command.




scale = .27
left = 80
bottom = 64

Figure 4-4. A zoomed view


Scrolling a Window

You can move around in a sketch by scrolling the window in one of four directions: to the right, to the left, upward, or downward.


Scrolling to the Right

Slide the cursor from inside the Sketch window to just outside the bottom edge. The cursor will change to , and a scroll bar will appear. Press the right button and the sketch will scroll to the right by the amount the cursor is from the left end of the scroll bar. That is, to scroll less, move the cursor closer to the left edge. Pressing the right button again will scroll again as long as the cursor is still in the scroll bar.


Scrolling to the Left

Slide the cursor from inside the Sketch window to just outside the bottom edge. The cursor will change to , and a scroll bar will appear. Press the left button and the sketch will scroll to the left by the amount the cursor is from the left end of the scroll bar. That is, to scroll less, move the cursor closer to the left edge. Pressing the left button again will scroll again as long as the cursor is still in the scroll bar.


Scrolling Up

Slide the cursor from inside the Sketch window to just outside the left edge. The cursor will change to , and a scroll bar will appear. Press the left button and the sketch will scroll up by the amount the cursor is from the top of the scroll bar. That is, to scroll less, move the cursor closer to the top. Pressing the left button again will scroll again as long as the cursor is still in the scroll bar.

Scrolling Down

Slide the cursor from inside the Sketch window to just outside the left edge. The cursor will change to , and a scroll bar will appear. Press the right button and the sketch will scroll down by the amount the cursor is from the top of the scroll bar. That is, to scroll less, move the cursor closer to the top. Pressing the right button again will scroll again as long as the cursor is still in the scroll bar.

Moving the Region Viewed

You can move to any part of a sketch, without scrolling the window, using the **Move view** command. First, select **Move view** from the top-level command menu. The cursor will change to . Specify the new portion of the sketch that is to appear in the window by depressing any mouse button at one corner of the region and sweeping the cursor to the opposite corner (see figures 4-5 and 4-5). The specified region is outlined in grey. When the button is released, the portion of the sketch within the grey box is scaled to fill the Sketch window. The box maintains the same aspect ratio (proportions) as the window. The section may be smaller or larger than the current window size. To abort this command, specify a region that does not overlap the window, or press CONTROL-E. This action can also be initiated by selecting the **Move view** command from the **Move view** submenu.

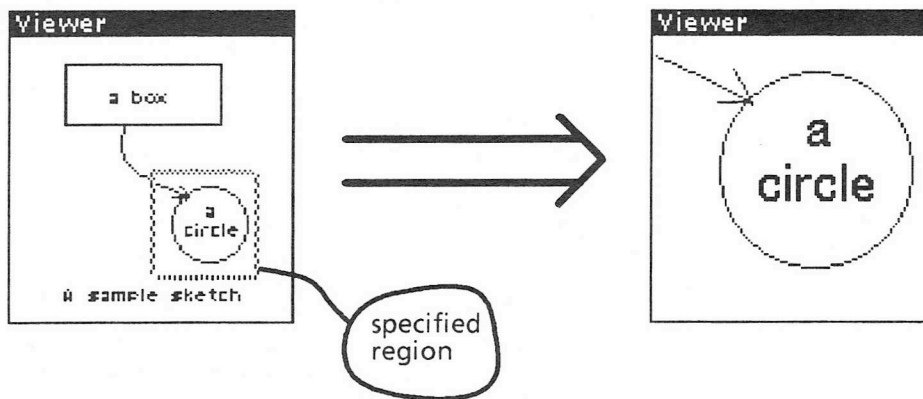


Figure 4-5. Zooming in with the **Move view** command

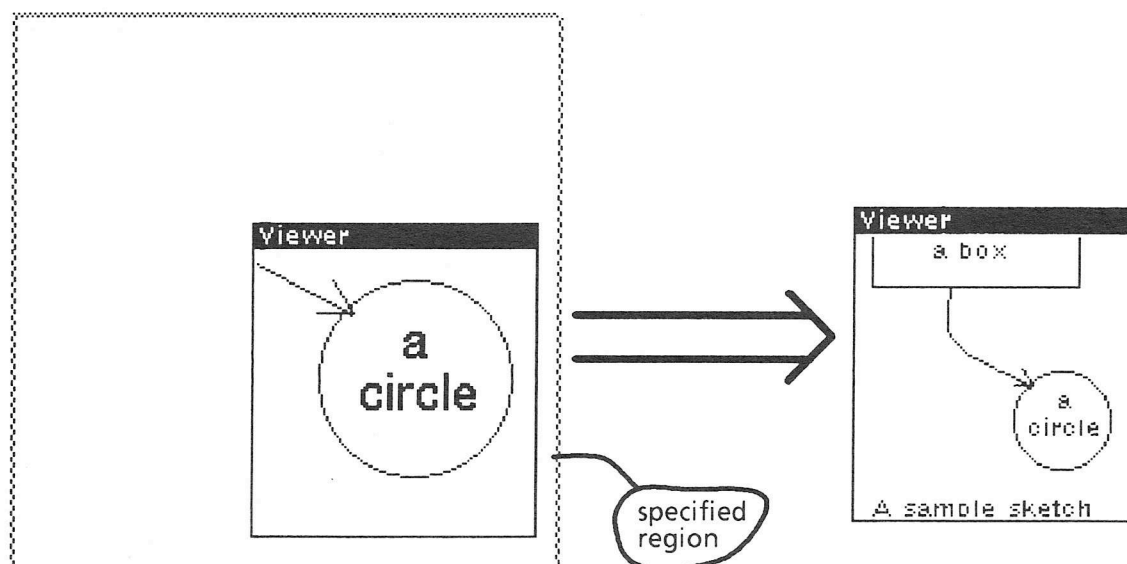


Figure 4-6. Zooming out with the **Move view** command

Expanding or Shrinking an Image

See the command documentation for **Move view**.

Opening a Second Window Onto a Sketch

It is sometimes useful to work on two views of a sketch at once. You can do this by opening a second window onto the sketch. First, select the **Move view** command, press the left button, and slide the cursor out through the grey arrow. Select the item **New Window** from the submenu that appears. You will be prompted for a region of the screen in which to put the second Sketch window. The second window can be scrolled or zoomed without affecting the view in the original window. Any changes made to either window are reflected in both windows.

Opening a Page-Sized Sketch Window

When making large figures, particularly for overhead transparencies, it is useful to have a window that is exactly the same size as a sheet of paper. Use the function EDITSLIDE for this purpose. Typing the EDITSLIDE function into the Exec window will prompt you for the location of a page-sized window and open a Sketch window there.

Note: A page-sized window is 612 points ($8\frac{1}{2}$ ") wide and 792 points (11") high.

Cleaning Up the Display

In the course of editing a sketch, the image of the figure may develop holes where elements were erased. To clean up the

display, move the cursor into the title bar of the Lisp background menu, press the right button, and select **Redisplay**.

Finding Your Way Around in a Sketch

Since a sketch can extend past the window boundaries in both directions and can be zoomed to make the image very large or very small, it is easy to lose track of which region of the sketch a window is viewing. Sketch provides a number of facilities to make it easier to navigate in figures. There are commands to return to the home position and to get to an overview position. There is a facility for naming viewpoints on the sketch and returning to them, called *views*. There is also a facility for finding out where in the sketch coordinate space the cursor is, called coordinate windows. These facilities are all available on the submenu of the **Move view** command documented in Chapter 3, Using the Sketch Command Menu.

Finding Your Way Home

Move the cursor over the **Move view** command, press the left button, and slide the cursor out the right side through the grey arrow. Select the **Home** option from the submenu. The region of the sketch displayed in the window will return to its home position (i.e., its scale will be 1.0 and the lower-left corner will be (0,0)).

Getting an Overview of the Sketch

Move the cursor over the **Move view** command, press the left button, and slide the cursor out the right side through the triangle. Select **Fit to window** from the submenu. The region of the sketch displayed in the window will be adjusted so that the whole sketch is just visible in the window. That is, it changes the scale so that the largest extent of the sketch fits the extent of the window and places the center of the sketch in the center of the window. If you get lost, this is usually a good way back.

Restoring a View on the Sketch

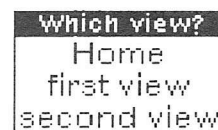
Move the cursor over the **Move view** command, press the left button, and slide the cursor out the right side through the triangle. The middle menu shown below will appear. Move the cursor over the **Restore view** option, then slide it out the grey arrow. A third menu shown below will appear.



Select the option **Save view**. The Sketch prompt region will display the message "Name for this view:." The caret will be flashing after the message. Type the name you want this view to have, ending with a carriage return. When you press <RETURN>, the view in the window will be associated with the entered name. You can then return to this place in the sketch by using the **Restore view** command described below.

Returning to a View on the Sketch

Move the cursor over the **Move view** command, press the left button, and slide the cursor out the right side through the grey arrow to display the submenu. Select the item **Restore view**. A menu containing the item **Home** and the names of any other views you have saved with the **Save view** subcommand will appear. For example, if you saved two versions of the sketch labeled "first view" and "second view", the menu that appears would look as follows:



Select the name of the view you want, and it will be redisplayed in the Sketch window.

Forgetting a View

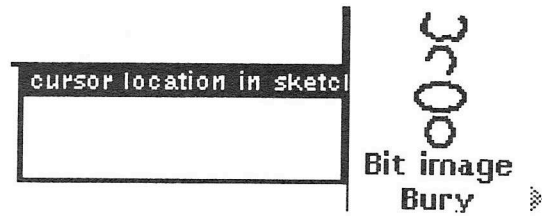
Move the cursor over the **Move view** command, press the left button, and slide the cursor out the right side through the grey arrow to display the submenu. Move the cursor over the **Restore view** item, then slide it out the right side through the arrow to display the next submenu of options. Select the item **Forget view**. A menu containing the item **Home** and the names of any other views you have saved with the **Save view** subcommand will appear. Select the name of the view you want to be removed. The selected name will no longer appear in the menu of saved views.

Opening a Coordinate Display Window

Move the cursor over the **Move view** command, press the left button, and slide the cursor out the right side through the grey arrow. The menu shown below will appear.



The middle menu shown in figure will appear. Select the item **Coord window**. A small window titled **Cursor Location in Sketch** will appear at the bottom-right edge of the Sketch window.



Whenever the cursor is in the Sketch window, this window will display its location in sketch coordinates. The subcommand **Grid Coord window** will bring up a window that gives the coordinate of the grid point closest to the position of the cursor. You can close the **cursor grid location window** when you are finished with it by putting the cursor in the window, pressing the right mouse button and selecting **Close** from the Lisp background menu.

