SECOND CITY SOFTWARE

Graduate

User's Guide

SCS-Draw
User's Guide

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This manual was prepared on a Kaypro 10, using only WordStar and SCS-Draw. The text was printed on a Kaypro/Juki 6100, and the illustrations were printed on a Hewlett-Packard 2225C Thinkjet.

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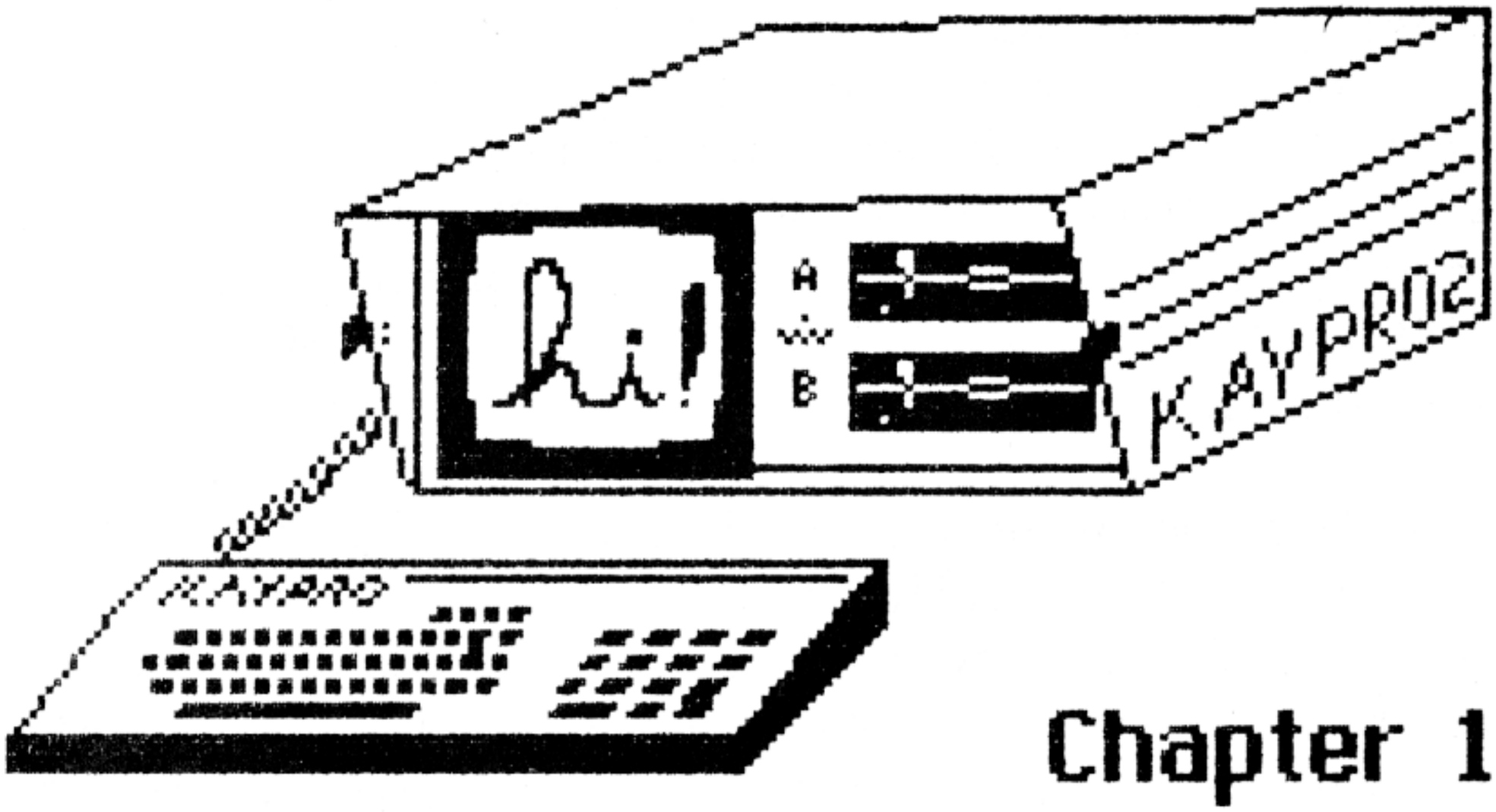
Software publishers have tried many different ways to protect their programs from those people who believe they have a right to give away (or even sell) copies of programs they have purchased. Licensing agreements and copy protection schemes only work, however, if they are so restrictive that they make the product much more difficult to use.

In consideration of this, we have provided this copy of SCS-Draw to you with no licensing agreement and no copy protection. After putting so much work into making SCS-Draw easy to use, we decided that it would be a shame to intentionally make it harder for you to use.

SCS-Draw is protected by copyright, just like a book. But in lieu of any kind of licensing agreement or copy protection scheme, we would like to suggest the following mutually beneficial agreement: we will produce quality software for the Kaypro computer and sell it at reasonable prices, and you will respect the time and effort that went into our programs by not selling, giving away, or loaning copies of them to your friends or associates.

Thank you.



Chapter 1

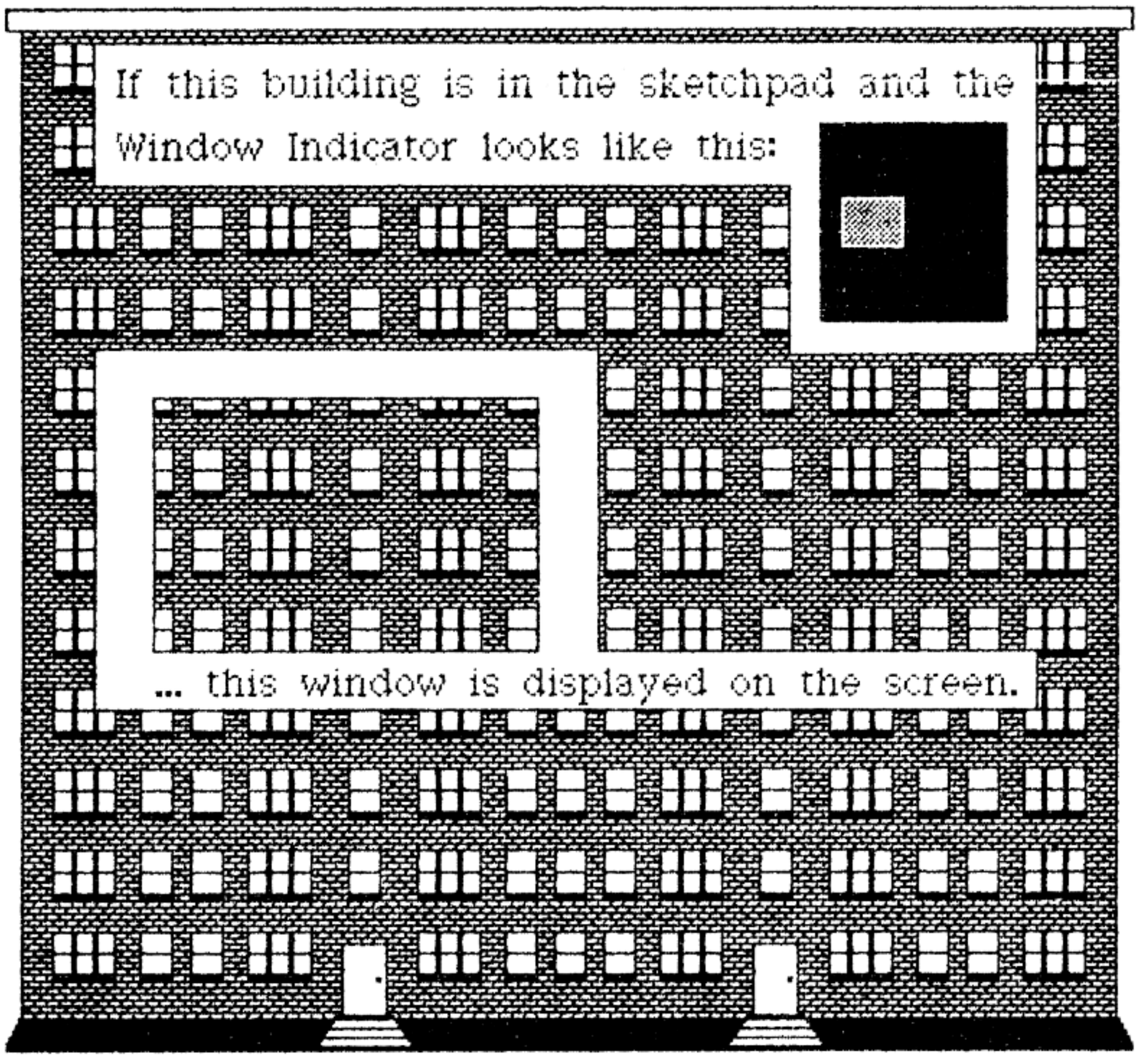
Introduction

SCS-Draw is the first true drawing program designed for the Kaypro 8-bit computers. It gives you the ability to easily draw pictures, graphs, or other images on your Kaypro computer's screen and print them on your dot-matrix or daisywheel printer. (See Appendix A for a list of currently supported printers.) Whether you need to print a technical illustration or a party invitation, SCS-Draw will help you do it quickly and easily with your Kaypro computer.

This introduction will give you a good idea of what SCS-Draw has to offer and how it works. If you're in a hurry to get started, you may want to go straight to the next section of the User's Guide, Getting Started. If you do jump ahead, however, we recommend that you come back and read the introduction later; it may answer some of your questions about SCS-Draw.

When you use SCS-Draw, your Kaypro's screen becomes an interactive sketchpad with many powerful drawing commands just one or two keystrokes away. You can draw pictures, save them on disk, modify them, combine them, and print them in many different ways, all without leaving the SCS-Draw sketchpad.

The SCS-Draw sketchpad is much larger than the Kaypro screen itself, giving you the ability to work on images that are too detailed to be displayed on the screen. The Window Position indicator at the top left corner of the screen shows where you are within the entire sketchpad area. The example below shows how this works.



All of the SCS-Draw commands are described in detail in the Getting Started and SCS-Draw Commands sections of the User's Guide. Before you start learning specific commands, however, the following overview of SCS-Draw's capabilities will help you see how it all fits together.

The cursor. SCS-Draw uses a very small blinking cursor for drawing on the sketchpad. This cursor allows you to change individual dots (pixels) within a drawing, and it also allows you to position elements very accurately. The cursor is moved with the arrow keys, the numeric keypad, or WordStar commands.

Drawing modes. SCS-Draw provides four modes for moving the cursor within the sketchpad. These four modes are:

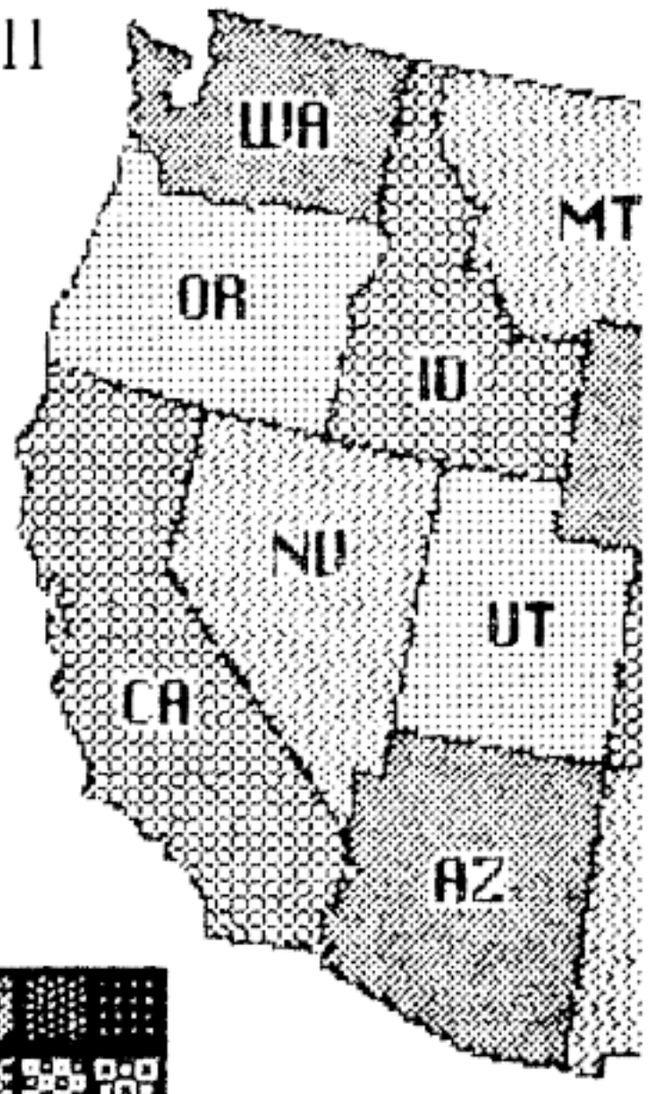
Move Mode allows you to move the cursor around within the sketchpad, without changing the image as you pass over it. While in Move mode, you can change the current pixel to black by pressing the period (.) key, or change it to green by pressing the space bar.

Draw Mode leaves a continuous black line behind the cursor so that you can quickly sketch an outline or fill in details.

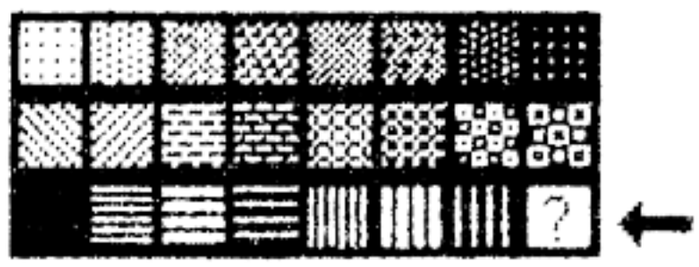
Erase Mode is similar to draw mode, but it draws a ~~black line~~ GREEN instead of ~~green~~ BLACK.

Inverse Mode automatically draws black lines on green background and green lines on black background. In other words, Inverse Mode allows you to draw a visible line through any combination of black and green areas.

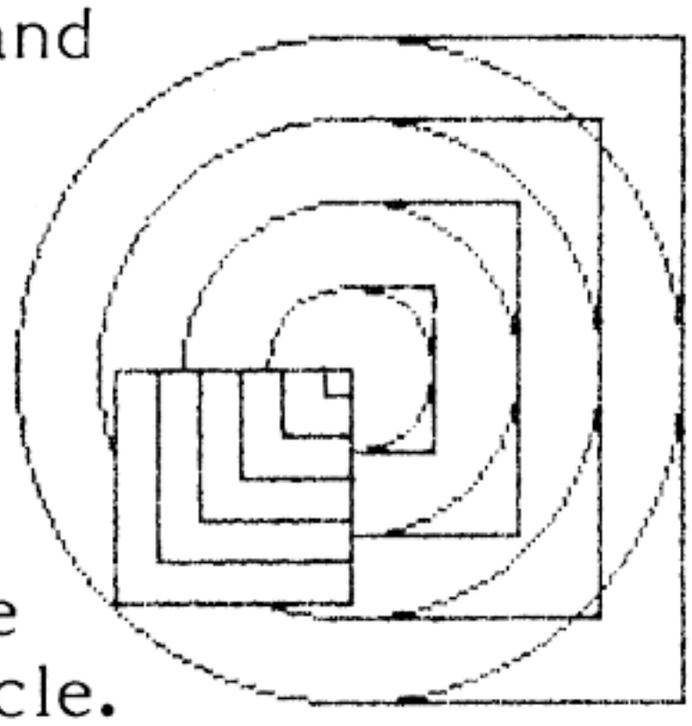
Pattern Filling. SCS-Draw lets you fill enclosed areas with any of 23 built-in patterns or a pattern that you can define. This can be used for subtle shading effects, to label sections of a bar chart, a pie chart, or even a map, as shown here.



Patterns are selected from a pop-up menu that shows exactly what each pattern looks like. The user-definable pattern is displayed in the lower right corner of the menu, and can be changed at any time.



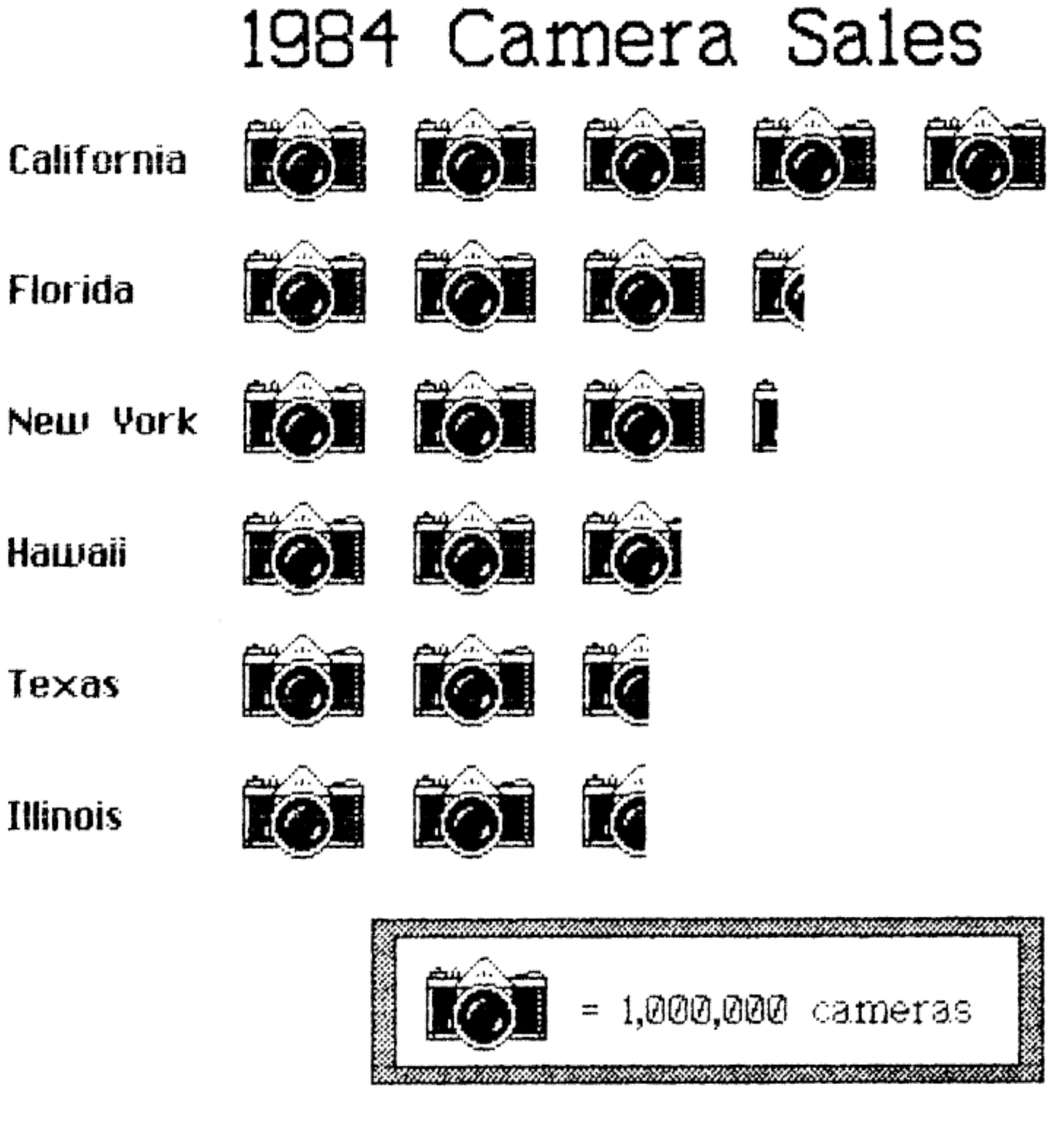
Lines, Circles and Rectangles. These commands are part of any good graphics program, and SCS-Draw is no exception. Each of these basic shapes can be drawn at any size, at any position, in black or green. Lines are drawn between two specified points, rectangles are drawn by marking opposite corners, and circles are drawn by marking the center point and the edge of the circle.



The Line command has two modes: connected lines, or a fixed endpoint. With the fixed endpoint feature, you can quickly draw many lines radiating from the same point.

Block Move. Block Move can be used to move sections of an image (or even the entire image) within the sketchpad. Other block commands, such as Block Copy, allow you to copy an element or image without re-drawing it.

The chart below shows how Block Copy can be used for pictorial charts.



File Merge. The Merge command allows you to combine images that have been drawn and saved separately on disk. This command has many interesting applications; after you get used to using it, the Merge command will allow you to design large images very easily.

Text. SCS-Draw provides four different built-in fonts, as shown below. These fonts can be used for labels or titles, and can be placed anywhere within an image. You may freely mix text and graphics, and the text can be moved or manipulated by any of the drawing commands.

Regular Font aAbBcCdDeEfFgG

Italic Font aAbBcCdDeEfFgG

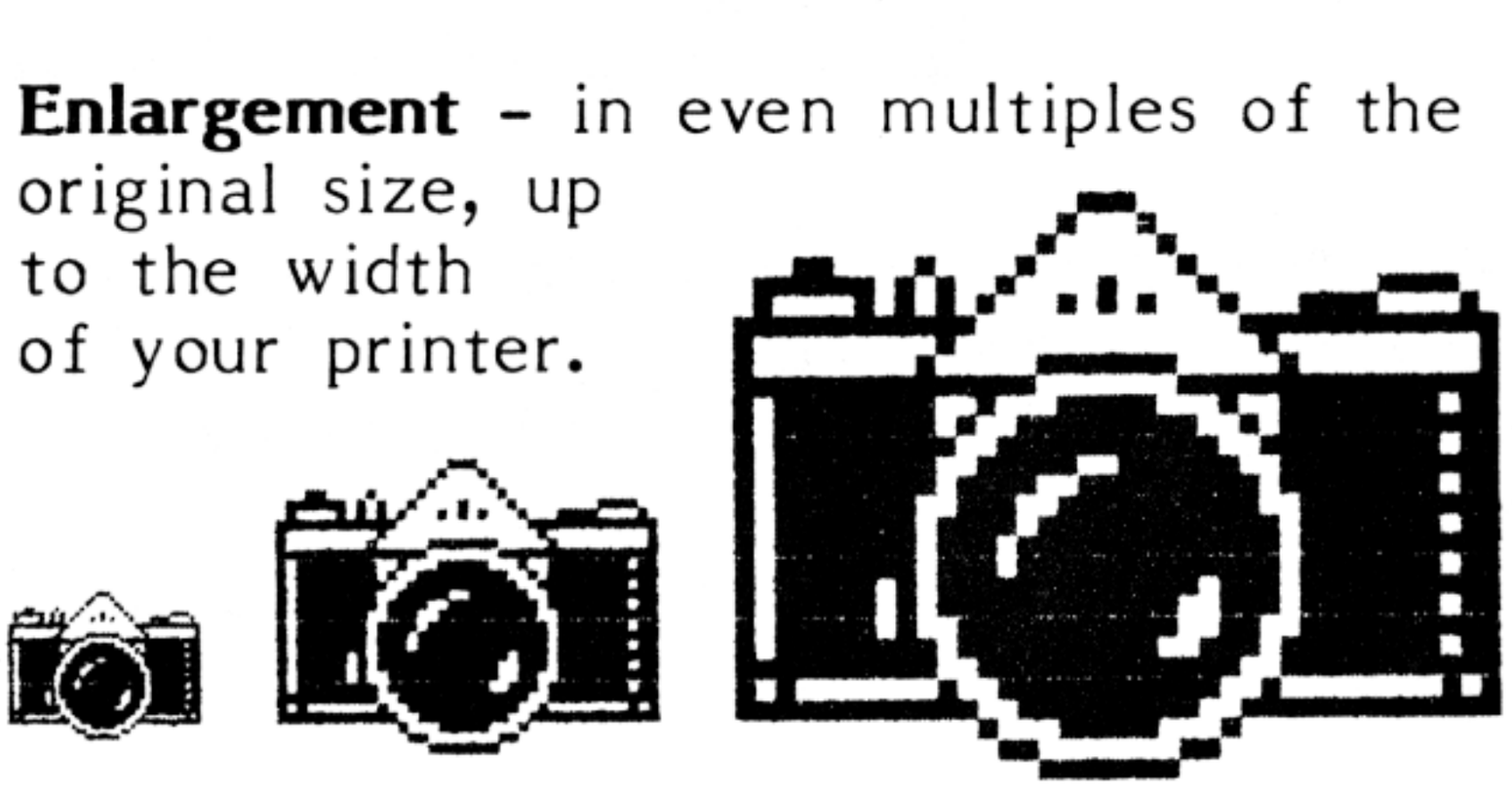
Bold Font aAbBcCdDeEfFgGhHiIjJk

Little Font aAbBcCdDeEfFgGhHiIjJkKlLmMnN

Printing Options. SCS-Draw provides ten printing options, which can be used in any combination. These options give you complete control over the size and position of your drawings on the printed page. The printing options are:

Rotation - print the image upside-down or rotated 90 degrees to the left or right.

Enlargement - in even multiples of the original size, up to the width of your printer.



Indentation - for setting the left margin on the printer.

Mirror Image - can also be combined with the Rotation option to flip images vertically.

Negative Image - changes black-on-white printing to white-on-black.

Bold Printing - prints every dot twice, for higher contrast and blacker blacks. (Especially useful when printing images to be reproduced.)

Repeats Across - limited only by the width of your printer.

Flip-Flop - when used with the Repeats Across option, makes every other repetition print as a mirror image. Good for borders and comical effects.

Repeats Down - when combined with Repeats Across, can be used to print an image in a repeating pattern.

Printer Selection - allows you to use SCS-Draw with many different printers, without re-installing the program or using separate "printer driver" programs.

The ability to combine print options lets you print almost anything you can imagine. For example, you can print a folding greeting card with an image on the front cover, message on the inside, and image on the back cover. (The procedure for doing this is covered in Chapter 5, Applications.)

Ease of Use

Although SCS-Draw is very powerful, it also easy to use. You'll find that SCS-Draw has a "feel" that is different from most of the CP/M software that runs on your Kaypro. This is because most CP/M programs are designed to run on many different machines, and therefore don't take full advantage of the capabilities of a given computer (the Kaypro, for instance). SCS-Draw, however, is designed specifically for the Kaypro, which means that ease of use has not been sacrificed for "generality."

Some of the features that make SCS-Draw so easy to use include:

No Installation. Your copy of SCS-Draw is ready to use immediately. It will run on any Kaypro with graphics capability and can use most popular printers. (See Appendix A for a complete list of computers and printers supported.) If you would like, you can set the default printer to the type you'll be using most often, but this isn't required.

Intelligent Help. Like many newer programs, SCS-Draw includes on-line help. But SCS-Draw displays help only when you need it. For example, if you type L1 to mark the beginning of a line, no help is displayed. But if you type L and then hesitate before typing the next letter, a list of the Line commands is displayed in a pop-up menu on the screen. After you make your selection, the list disappears.

Pop-up Menus. All of the help screens are displayed in bright pop-up menus that appear on the SCS-Draw sketchpad. After you're through with a menu, it disappears, revealing the sketchpad behind it.

Image Libraries. Have you ever wished that you could use longer, more descriptive filenames? With SCS-Draw, you don't have to worry about CP/M's 8-character limit when storing your previous work. SCS-Draw allows you to create Image Libraries of up to 5000 images (limited by disk space), and each image in the library can have a 20-character name made up of any combination of upper- and lower-case letters, numerals and punctuation. The entire image library appears as one file in your CP/M directory, but you can retrieve any image from the file with a single keystroke from within SCS-Draw.

WordStar-compatible Commands. If you're a WordStar user, you already know most of SCS-Draw's commands. To delete a dot, for example, you type CTRL/G. To move down one screen with a large image, you type CTRL/C, and to move back up you would type CTRL/R.

If you're not a WordStar user, you can still use SCS-Draw without learning WordStar commands, because SCS-Draw provides an equivalent intuitive command for every WordStar command. In the example above, you could have pressed the space bar to delete a dot, or pressed W (for Move Window) followed by the down-arrow to move down one screen.

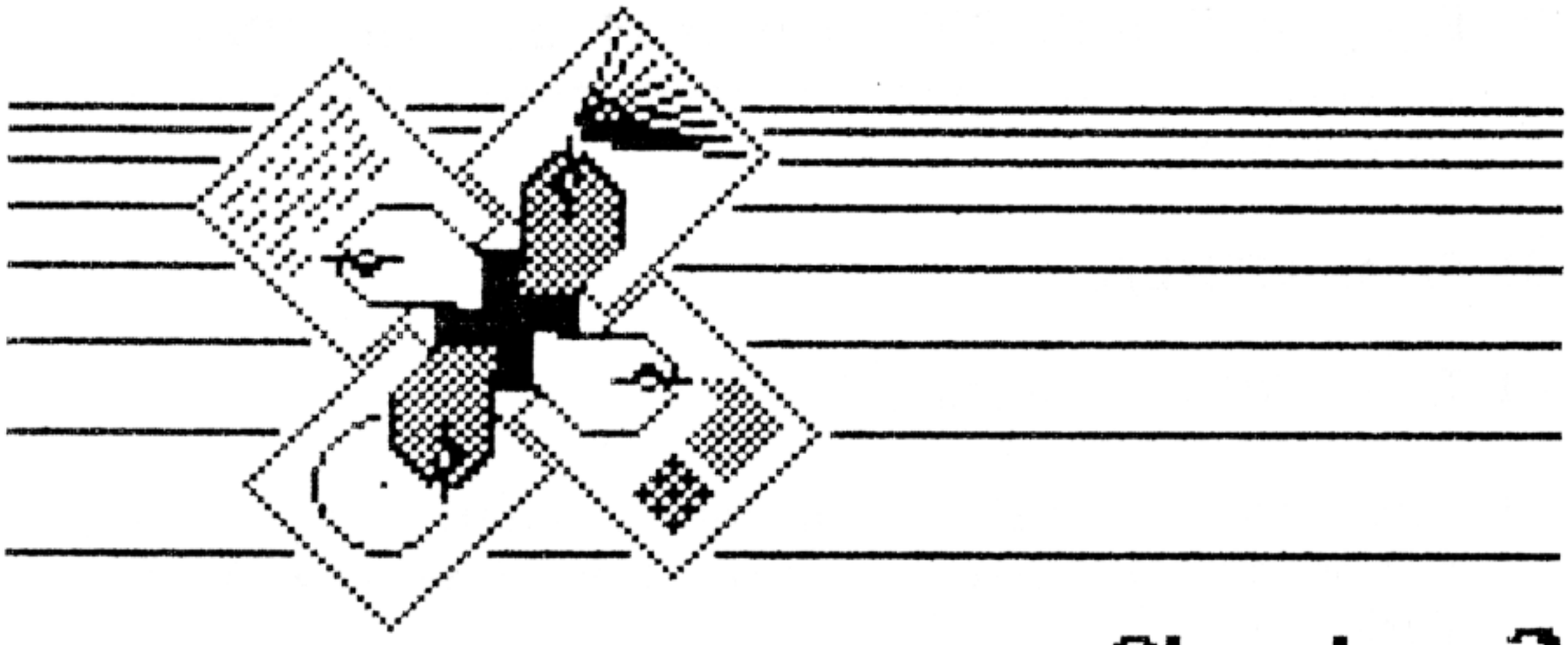
Forgiving of Mistakes. All computer users know the frustration of having a program refuse to accept a response when it's "obvious" what they meant. Although we can't promise that SCS-Draw will always know what you mean, you will notice that it ignores obvious errors. For example, if SCS-Draw asks you to enter a filename and you respond with **My File^X. dat.**, SCS-Draw will ignore the blanks, the CTRL/X, and the extra period, convert it all

to upper case, and assume that you meant **MYFILE.DAT.**

Organization of The User's Guide

The next four chapters explain the SCS-Draw commands and give suggestions for specific applications of SCS-Draw. Chapter 2, Getting Started, will take you through all of the SCS-Draw commands in a hands-on tutorial, while Chapter 3 is a reference section that presents the commands in more detail. Chapter 4, Mastering SCS-Draw, explains how to use combinations of commands for advanced effects, and Chapter 5, Applications, gives some ideas for things that you might want to do with SCS-Draw.

If you need additional information on a specific command, look it up in the index at the back of the book. Commands are listed both by their names and by the keystroke combinations they use, to help you find the information you need quickly and easily.



Chapter 2

Getting Started

This chapter covers what you need to know to start using SCS-Draw. It tells you how to make a working copy, how to start drawing on the sketchpad, and how to use the sample images that came with your copy of SCS-Draw.

Making a Working Copy of SCS-Draw

You should make a working copy of the SCS-Draw Master Diskette before you try to use the program. The exact procedure for making a working copy may vary, depending on which model of Kaypro you use.

If you have a two-drive Kaypro (2'84, 4'84, New 2), follow these steps:

1) Format a blank diskette, using the **COPY** program that came with your Kaypro.

2) Put a disk with PIP on it (such as your CP/M disk) in drive A:, and put the formatted blank disk in drive B:.

3) Press **CTRL/C.**

4) Type **PIP** and press RETURN.

5) After the asterisk (*) prompt appears, replace the CP/M disk in drive A: with the SCS-Draw Master Diskette.

6) Type **B:=a:*.*[OV]** and press RETURN.

7) After the asterisk (*) prompt appears again, remove the SCS-Draw Master Diskette from drive A: and put it in a safe place. Make a label that says "SCS-Draw Working Disk" for the newly copied disk from drive B:.

If you have a Kaypro 10, follow these steps:

1) Put the SCS-Draw Master Diskette in the floppy disk drive and press **CTRL/C.**

2) Use the **USER** command to go to the user number where you will be working with SCS-Draw.

3) If the user number where you will be working with SCS-Draw is on the A: disk, type the command **PIP A:=C:*.*[G0OV]** and press RETURN; if the user number where you will be working with SCS-Draw is on drive B:, type **PIP B:=C:*.*[G0OV]** and press RETURN.

4) After PIP has finished copying the files and you see the Warm Boot message, remove the SCS-Draw Master Diskette and put it in a safe place.

Setting the Default Printer

After you have created a working copy of the SCS-Draw diskette, you're ready to start drawing. To save time later, however, you may want to set the default printer selection to your printer. Follow the instructions below to set the default printer.

For the Kaypro 2'84, 4'84, New 2, and 2X:

1) Put your CP/M disk in drive A: and your SCS-Draw Working Disk in drive B:.

2) Press **CTRL/C** (at the A> prompt) to log in the SCS-Draw disk.

3) Set the default to drive B: by typing **B:** and pressing RETURN.

4) Type **SETDRAW** and press RETURN. You will be asked for a printer selection. When you select your printer, the copy of DRAW.COM on the Working Disk will be changed to make that selection the default printer.

For the Kaypro 10:

1) Use the **USER** command to move to the user number that contains SCS-DRAW.

2) Type **SETDRAW** and press RETURN. You will be asked for a printer selection. When you select your printer, your working copy of DRAW.COM will be changed to make that selection the default printer.

NOTE: If there is a file called README on your SCS-Draw Master Diskette, it

contains additional information that was not available at the time this manual was printed. You should read that file before using SCS-Draw. (If there is not a file called README on your SCS-Draw Master Diskette, that means that this manual contains all of the information you need to use SCS-Draw.)

To print a copy of the README file, follow these steps:

1) Put your CP/M disk in drive A:.

2) Type PIP and press RETURN.

3) When the asterisk (*) prompt appears, remove the CP/M disk and insert the SCS-Draw disk.

4) Type LST:=README and press RETURN.

Running SCS-Draw for the First Time

The rest of this chapter takes you step-by-step through the basics of using SCS-Draw. The first time you use the program, read through this section, following the instructions as you go along. You'll become familiar with the basic commands you need to start drawing and printing images.

Whenever you start the program, you use the command **DRAW.** To view or edit the drawings that have been saved in a particular image library, the command is **DRAW libname,** where **libname** is the name of the image library.

Now we'll take you step-by-step through SCS-Draw, using the sample image library. Type the command **DRAW SAMPLE.DRW** and press RETURN.

The first thing you'll see is the title screen, which contains the copyright notice and your SCS-Draw serial number. Look at the bottom line of text on the title screen -- that line always tells you the name of the image library you'll be working with. If you only use the command DRAW and don't enter an image library name when you start SCS-Draw, the program will open an image library called SCRATCH.DRW for you to use.

Press any key to continue from the title screen, and you'll see the SCS-Draw sketchpad. The sketchpad is the "main menu" of SCS-Draw, and it contains several important elements. For right now, notice the list of commands around the left edge and bottom of the screen.

The large, light green area that takes up most of the screen is the drawing area. In the upper left corner of this area, you'll notice a small blinking cursor. This is the cursor that you will use for all of the drawing commands.

Press the down arrow key, and the cursor should move down. Try the four arrow keys, to make sure that the cursor responds correctly to all of them. If the cursor doesn't respond correctly, you'll need to configure the arrow keys, as explained in Appendix D. (If the arrow keys are configured for use in WordStar, they will work correctly with SCS-Draw.) If your arrow keys need to be re-configured, press **ESC** to exit SCS-Draw, follow the instructions in Appendix D, "Redefining Your Arrow Keys," and then start this section over again.

Now, notice the drawing mode indicator at the left edge of the screen; it should say MOVE. (Remember that there are four drawing modes: Move, Draw, Erase, and Inverse.) Press the **D** key, and the mode will change to DRAW. Now use the arrow keys to move the cursor around in the drawing area, and it will leave a black line behind. Press **M** to change back to Move mode, and you can move the cursor across the lines you have drawn without changing them.

> NOTE: If your cursor disappears while it's moving, try changing the blinking rate. There are two blinking rates, and they are selected by the < and > signs; press **<** for the slow rate, or **>** for the fast rate. These commands only affect the blinking of the cursor and the delay for on-line help, which is explained later.

To view the images from the sample library, you use the **S** command (Save/Select). Note that the S command is at the top of the command list along the edge of the sketchpad. Now press S to go to the Save/Select Image menu.

The Save/Select menu displays a list of the contents of the current image library. If you see a message that says "The current image library is empty," check the image library name at the bottom of the screen to see if you spelled it correctly. If not, press **L** and enter the sample library name again (**SAMPLE.DRW**).

The top image in the list will be highlighted with a green bar. You use this bar to select an image for viewing or editing; use the arrow keys to move the bar up and down. When the bar is over an image you

would like to view, press **G** (for Get selected image) or RETURN.

After you select an image, the image will be displayed in the sketchpad.

Windowing

If the image is too big to be displayed entirely on the screen, you will see only the upper left corner of the image when you first select it. To view other sections of the image, you must move the current "window." To move the window, press W and then press an arrow key to specify the direction to move the window. Or, if you are familiar with WordStar commands, you can use the Word Right (**CTRL/F**) and Word Left (**CTRL/A**) commands to move the window right and left, and the Page Up (**CTRL/R**) and Page Down (**CTRL/C**) commands to move the window up and down.

Note that the window indicator in the top left corner of the sketchpad always shows where the window is currently located within the entire sketchpad. As you can see by the window indicator, SCS-Draw can work on images many times larger than the Kaypro screen.

Drawing with SCS-Draw

After you have viewed one or more of the sample images, you will probably want to try drawing something. In addition to the Draw and Move modes explained earlier, there are drawing commands that automatically generate lines, circles, rectangles, text, and patterns.

To experiment with these commands, you'll need a blank sketchpad. If you currently have an image displayed in the sketchpad, press the **DEL** (delete) key and then press **Y** to erase the image. Note that the DEL command only erases the sketchpad; if the image was saved on disk in an image library, it will still be there.

Two other things to know before using SCS-Draw:

1) The commands do not require that you press RETURN after them.

2) If you get into a menu accidentally, pressing ESC will bring you back to the sketchpad.

First, let's look at the Help Screens, which explain many of the SCS-Draw commands. To display the first Help Screen, press the **H** key. Then, just follow the instructions at the bottom of the first Help Screen to look at the other Help Screens.

Note that one of the Help Screens summarizes the three different ways of moving the cursor on the sketchpad:

1) Arrow keys
2) Numeric keypad
3) WordStar commands

The diagram on the Help Screen shows the direction in which each key on the numeric keypad moves the cursor. Notice that the four corner keys on the numeric keypad move the cursor diagonally.

The WordStar-compatible commands are handy if you are already familiar with WordStar commands for moving the cursor up, down, left, and right.

When you are finished looking at the Help Screens, press ESC to return to the sketchpad.

Next, try the Quick Move command. As you can see in the sketchpad menu, the TAB key activates Quick Move. Try pressing the TAB key. About a second after you press the TAB key, a set of markers will appear on the screen, showing where you can move with Quick Move. To move the cursor to one of the marker positions, just press its number. For example, to move to the center of the screen, press 5.

Now try doing a Quick Move without waiting for the position markers to appear. For example, press TAB followed very quickly by 3. The cursor will appear in the lower right corner of the screen, without displaying the position markers.

This is an example of how all of the two-keystroke commands work. If you hesitate between the first and second keystroke, SCS-Draw will asume that you need help and will display an explanation of the possible second keystrokes. But if you enter the command quickly, SCS-Draw will simply execute the command, without displaying any help, prompts, or menus. If you know that you need help with a command, you can hit the first keystroke twice, and the help will be displayed immediately.

Drawing Rectangles

Now we'll draw a rectangle with the R command. Make sure that you're in Move mode (by pressing the M key). Then follow these steps:

1) Press **TAB 7** to move to the top left corner of the sketchpad.

2) Press **R1** to begin a rectangle.

3) Press **TAB 5** to move to the middle of the screen.

4) Press **R2.**

A rectangle will be drawn, with R1 and R2 marking two opposite corners. Now type RF, for Rectangle Fill, and the rectangle will be filled with solid black.

If you are in Erase mode when you press RF, the rectangle is filled with green; in other words, the rectangle's area is erased. This is the quickest way to erase a section of the sketchpad. Try pressing E to change to Erase mode. Then press RF, and the rectangle will be erased.

Now press M to return to Move mode so you can try drawing lines with SCS-Draw.

Drawing Lines

Drawing lines is accomplished in two steps, just like drawing rectangles:

1) Move the cursor to a point where you want the line to begin, and press **L1.**

2) Move the cursor to a point where you want the line to end, and press **L2.**

If you move the cursor and press **L2** again, a line will be drawn from the previous line's endpoint. This allows you to draw a continuous line made up of line segments.

To draw more than one line from the same starting

point, use the **LF** (Line Fixed) command. For example, press TAB *5* to move to the center of the screen, and then press LF. Now move around the screen and press L2 at several places. The lines will all be drawn from the center of the screen.

Drawing Circles

Follow these steps to see how the Circle command works:

1) Erase the sketchpad (with the DEL command).

2) Press **TAB *5*** to move to the center of the screen.

3) Press **C1** to mark the center of a circle.

4) Press **TAB 8** to move to the top of the screen.

5) Press **C2** to mark the edge of the circle. The circle will be drawn immediately.

Now move the cursor down a few dots and press C2 again. Note that the center of the circle stays in the same place until you press C1 again to mark a different circle center, making it very easy to draw more than one circle with the same center.

Filling Areas with Patterns

SCS-Draw provides 23 pre-defined filling patterns, and one filling pattern that you can define. We'll now use one of the pre-defined filling patterns to fill the circle we have just drawn.

First, press TAB *5* to move the cursor to the center

of the circle. The cursor must be inside the area to be filled before you use the fill command.

Next, press **F** (for Fill). A menu of patterns will appear, with the top left pattern highlighted. Use the arrow keys to highlight a pattern that you like, and then press RETURN. The circle will be filled with the pattern you selected.

Drawing Text

Clear the sketchpad with the DEL command, and press TAB 4 to move to the middle of the left edge of the drawing area. Then press T for Text. A larger cursor will appear at the bottom of the screen, and you can type up to 80 characters of text to be displayed on the sketchpad. Just type out the text and press RETURN, and the text will appear on the sketchpad. If you typed more text than fits in the window, you can use W followed by the right arrow to move the window over to see the rest of your text. Then move the window back to the left edge of the sketchpad.

The position of the cursor when you press the T key determines where the text will be displayed. The dot that the cursor is on marks the **lower left corner** of the first character of text.

SCS-Draw lets you enter text into the sketchpad in four different type styles. To change the current type style, press **CTRL/T**. Four different fonts will be displayed, and you can use the arrow keys to highlight the font you want to use. Then press ESC to return to the sketchpad. Move the cursor to a new position for more text, and use the T command to enter text in the new font.

Unlike lines, circles, and rectangles, text is always displayed in Inverse mode. This means that you can write black text on a green background, or green text on a black background. To see this clearly, follow these steps:

1) Clear the sketchpad with the DEL command.

2) Fill the right half of the screen with black, by typing these commands: **M, TAB 8, R1, TAB 3, RF.**

3) Type **TAB 4** to move to the left edge of the screen, and press **T** to enter text mode.

4) Type in a string of text at least 20 characters long, and press RETURN.

Note that the text is displayed in black on the green half of the screen, but it automatically switches to green on the black half of the screen.

Block Moves

The Block Move commands give you the ability to cut and paste sections of your drawing. We'll use some text to demonstrate block moves, but keep in mind that block move can be used with any section of a drawing.

Clear the sketchpad again (with the DEL command), and move to the middle of the left edge with TAB 4. Then press T to enter text mode, type in your first name, and press RETURN.

The next step is to define a block around your name. To do this, move the cursor to the upper left corner of your name and press **B1.** Then move

the cursor to the lower right corner of your name and press **B2.**

After a block is defined, you can move it with the BM (Block Move) command. For example, type TAB 5 to move to the center of the screen, and then type BM. Note that the block is moved to a position that has the current cursor position as its **top left corner.** All of the block commands use the current cursor position as the top left corner of the new block position.

The BC (Block Copy) command works just like the BM command, but it leaves the original block where it was and makes a copy of it at the new position. Try it now: type **TAB 7** and then **BC.** There should be two copies of your name on the screen now.

Experiment with the block commands, putting more copies of your name around the screen with the BC command and moving them with the BM command. Note that Block Move always moves the most recent copy of the block, rather than the original copy. This allows you to make copies that overlap the original, without changing the appearance of the block that you are copying from.

Filling in the Details

For many of your drawings, you will want to edit individual pixels to fill in details. Although you can do this by carefully switching between the Move, Draw, and Erase modes, it is usually easier to stay in Move mode and use the period (.) key and the space bar.

The period key puts a black dot (pixel) at the current

cursor position. The space bar erases the dot at the current cursor position. If you stay in Move mode and use these two keys to draw and erase individual pixels, you can use your right hand to move the cursor (with either the arrow keys or the numeric keypad) and your left hand to draw or erase. This means that you don't have to take your eyes off the screen, which can be very annoying while you're editing individual pixels.

Printing an SCS-Draw Image

Now that you can draw with SCS-Draw, the next step is learning how to print your work. SCS-Draw lets you print images directly from the sketchpad, even if you haven't saved the image on disk. (We'll learn how to save images later.)

To print an image in SCS-Draw, press the **P** key. A large pop-up menu will appear, with a printer icon at the top. This is the Print Image menu. It is used to print images, to enter Typewriter Mode (for printing text), and to change the settings of the print options.

The first command listed in the Print Image menu is CTRL/P, "Print image." Normally, you could just press CTRL/P at this point and the image would be printed. Before printing for the first time, however, you must make sure that the printer selection is set for your printer. Since this may require that you change one of the print options, we'll take a quick look at the print options before printing the image currently in the sketchpad.

The second command listed in the Print Image menu is **CTRL/O**, "Change options." Press CTRL/O, and

the first print option (Rotation) will be highlighted. You use the arrow keys to move the highlighting bar up and down the list, so that you can change any of the print options.

To change a print option, just move the highlighting bar to the desired option and press ENTER (or RETURN). If the selected print option has only two possible settings (such as Mirror Image, which is either YES or NO), pressing ENTER will change it to the other setting. If more information is required for the option (such as the enlargement factor), you will be prompted to enter the information at the bottom of the screen.

Now look at the setting of the Printer selection, the last print option in the list. If it is not set to your printer, you should change it before attempting to print anything. You have already pressed CTRL/O, which allows you to change the Printer option. Then follow these steps:

1) Use an arrow key to highlight the Printer option, and press ENTER or RETURN.

2) Type the number of your printer from the list of printers that appears on the screen, and press ENTER or RETURN.

If you have already set your printer as the default printer as explained earlier, the Printer option will always be set to your printer when you display the Print Image menu.

To print the image currently in the sketchpad, with the current print options as displayed in the Print Image menu, press CTRL/P from the Print Image menu. After the image is finished printing, try

changing one or more of the print options and printing the image again. The print options can be used in any combination, so try using several of them at once. The print options are explained in detail in Chapter 3.

The third command in the Print Image menu is CTRL/T, "Typewriter mode." This command allows you to print lines of text on your printer immediately, as if you were typing them. To try Typewriter mode, press CTRL/T. Then type in some words (up to 80 characters) and press RETURN. The printer immediately prints what you typed. To get out of Typewriter mode, just press RETURN rather than typing in more words.

You may have noticed a command called Quick Print in the sketchpad menu. This command prints the current image **without any of the print options,** just to give you an idea of what it will look like. The only print option that affects Quick Print is the printer selection; it must be set to your printer for Quick Print to work correctly.

Saving Your Work on Disk

At any time, you can save the current contents of the sketchpad as an image in the current image library. There are two ways to save an image: you can **add** it to the current library, or you can **replace** an image in the current library with the new image you want to save.

To add the displayed image to the current library, follow these steps:

1) Press **S** to go to the Save/Select menu.

2) Then press **A** to add the image to the library.

3) If the image does not yet have a name, you will be asked to enter a name before the image can be saved on disk. Type in a name, and press RETURN.

4) When you see the cursor flashing inside a disk on the screen, the image is being saved on disk.

If you want to save the current image in a different image library, use the **L** command (in the Save/Select menu) to select a new image library before using **A** to add the image to the library.

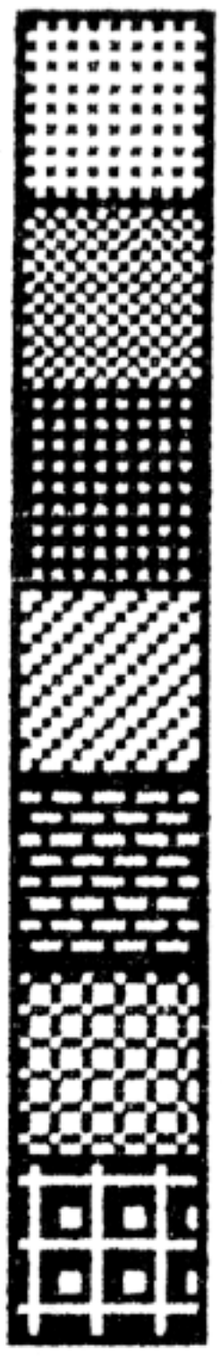
The Replace Image command is usually used to update an image with a new version. To replace an image in the current library, follow these steps:

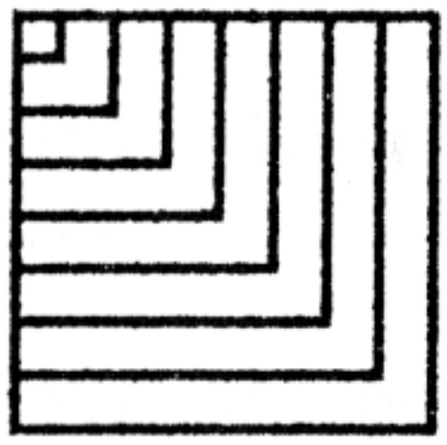
1) Press **S** to go to the Save/Select menu.

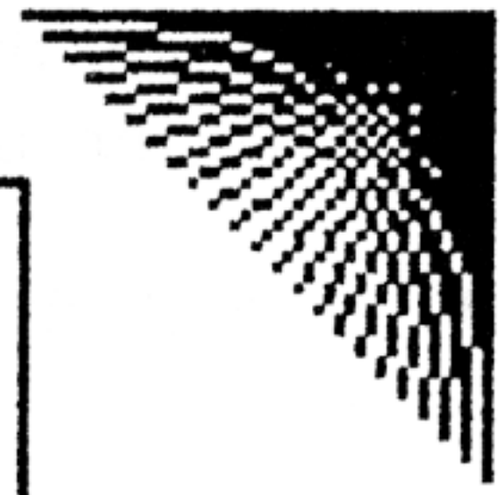
2) Use the arrow keys to highlight the image that you want to replace.

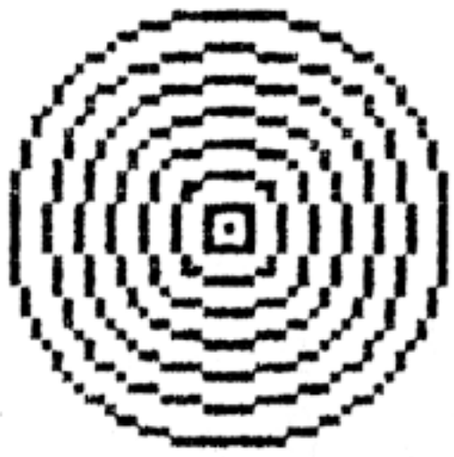
3) Press **R** to replace the selected image with the image currently in the sketchpad.

Congratulations! After finishing this chapter, you now know how to draw, print and save images with SCS-Draw. For more information on any of the commands covered in this chapter, refer to Chapter 3, which gives detailed information on all of the SCS-Draw commands. For information on specific techniques, refer to Chapter 4, "Mastering SCS-Draw." If you're looking for some ideas of things to do with SCS-Draw, Chapter 5, "Applications," explains how to create greeting cards, banners, and business graphics.









Chapter 3

SCS-Draw Commands

This chapter covers all of the commands used to draw, save, or print images with SCS-Draw. The basic commands are presented first, followed by the more powerful and advanced commands.

You'll get the most out of this chapter if you read through each command while running SCS-Draw on your Kaypro. After reading the description of each command, take some time to try using it. If you have any problems, re-read the instructions and try again until you have mastered the command.

Drawing Modes

When you move the cursor, its effect is determined by the current drawing mode. The current mode is always displayed along the left edge of the screen, above the command menu.

To change the current drawing mode, just press the first letter of the desired mode, as shown here:

M -- MOVE mode: Allows you to move the cursor without changing the image.

D -- DRAW mode: Every pixel the cursor passes over is changed to black.

E -- ERASE mode: Every pixel the cursor passes over is changed to green.

I -- INVERSE mode: Every pixel the cursor passes over is changed to the opposite color (black or green).

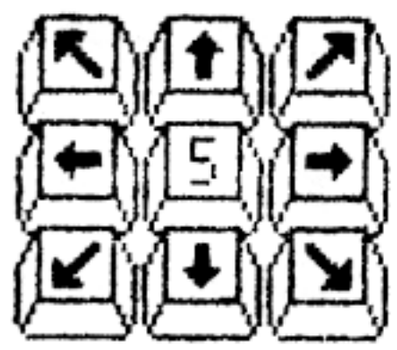
Moving The Cursor

The cursor is used for drawing (in DRAW mode), editing (in any mode), or specifying the location of lines, circles, rectangles, text, and other drawing elements.

There are three ways to move the cursor:

1) The arrow keys: 

2) The number keys on the numeric keypad:

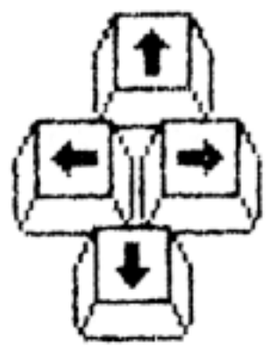


7 move diagonally up and left
8 move up
9 move diagonally up and right
4 move left
6 move right
1 move diagonally down and left

2 move down
3 move diagonally down and right

3) The CTRL key:

CTRL/E = move up
CTRL/X = move down
CTRL/S = move left
CTRL/D = move right



(These are WordStar commands.)

Editing Pixels

The following commands can be used to edit individual dots (pixels) in any drawing mode:

0 (zero) or **space bar:** Delete a pixel.
. (period key): Draw a pixel.

Pixels can also be deleted with CTRL/G, the WordStar command to delete a character.

Moving the Window

Moving the window allows you to draw or edit images that are larger than the screen. There are two ways to move the window:

1) W followed by an arrow key moves the window in the indicated direction.

W, RIGHT arrow -- move window right
W, LEFT arrow -- move window left
W, UP arrow -- move window up
W, DOWN arrow -- move window down

2) WordStar commands can also be used to move the window:

CTRL/F -- move window right
CTRL/A -- move window left
CTRL/R -- move window up
CTRL/C -- move window down

The Help Screens

The four Help screens present much of the information found in this section of the SCS-Draw manual. Use the following commands for on-line help:

H -- Display the first help screen.
space bar -- Display the next help screen.
ESC -- Resume drawing.

The Save/Select Menu

The Save/Select menu allows you to save drawings in an image library (on disk), or select an image from an image library. The following commands are available in the Save/Select menu:

A --------- Add the current image (in the sketchpad) to the current image library. The image is saved under the name currently in the sketchpad title. If no name is being used, a prompt will appear at the bottom of the screen, asking for a name to save the image under. You must enter a name to save the image, but you can later change the name if you wish, by using the N command.

UP arrow, DOWN arrow -- Select an image from the displayed list of images in the current image library. **The following four commands (R, G, M and N) use the image that has been selected with the UP and DOWN arrow keys.**

R --------- Replace the selected image (in the current library) with the current image (from the sketchpad).

G (or RETURN) -- Get the selected image and put it in the sketchpad (replacing the current contents of the sketchpad).

M --------- Merge the selected image with the current contents of the sketchpad (and leave the result in the sketchpad).

N --------- Change the name of the selected image in the image library.

RIGHT arrow -- Display the next page from the current image library. (There are 20 images per page in an image library.)

LEFT arrow -- Display the previous page from the image library.

L --------- Change the current image library.

ESC ------- Return to the sketchpad.

Print Image Menu

The Print Image menu displays the current settings of all of the print options. It also provides the

following commands:

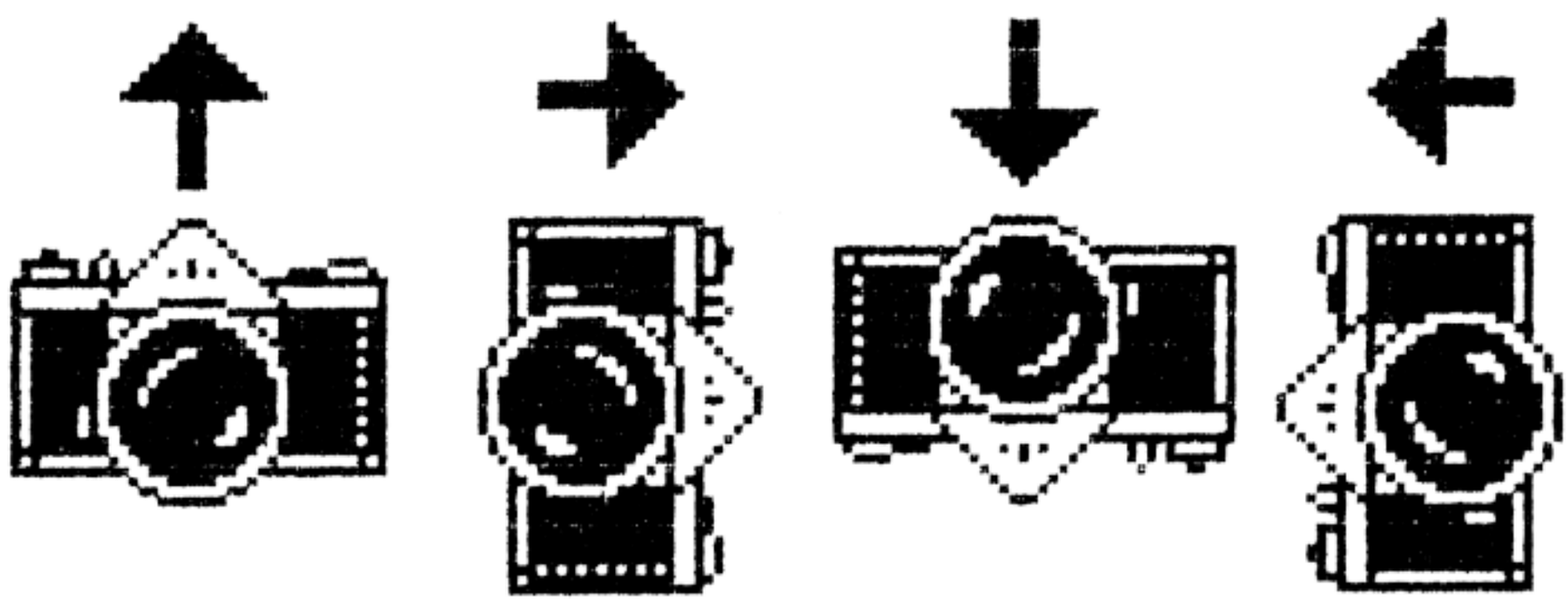
CTRL/P -- Print the current image. This command prints the image currently in the sketchpad, with all of the print options that are currently displayed in the Print Image menu.

CTRL/O -- Change print options. Use the arrow keys to select an option, and then press ENTER or RETURN to change the option. If the option is a YES/NO option (such as Mirror Image), it will be changed immediately. For other options (such as Enlargement), you will be prompted for specific information.

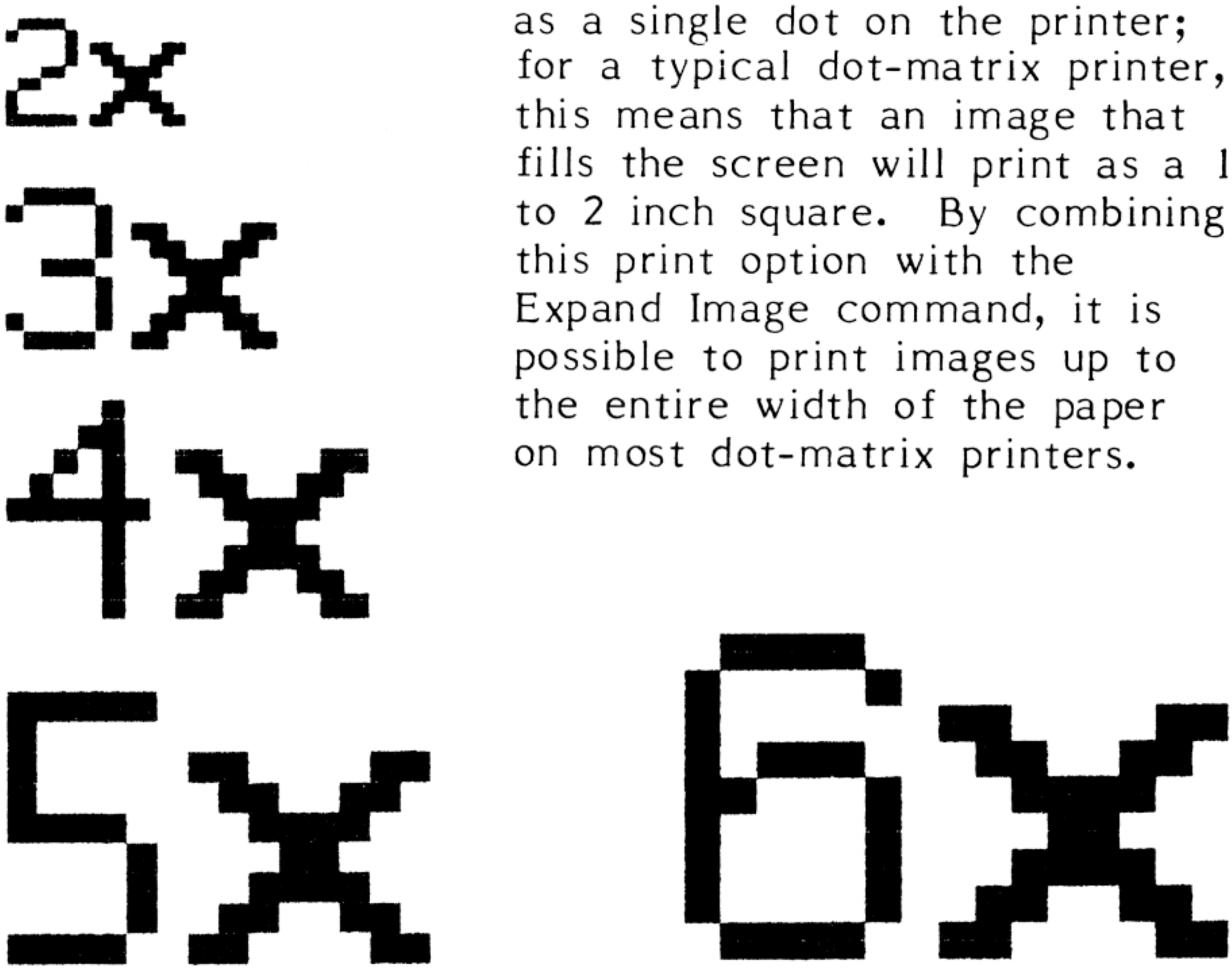
NOTE TO LETTER-QUALITY PRINTER OWNERS: Some of the print options, such as Rotation and Enlargement, are not supported by letter-quality printers.

The 10 print options are:

Rotation: Specifies the direction in which the top of the image will point -- UP (normal), DOWN, RIGHT or LEFT.



Enlargement: Specifies the printed size of the image, up to six times its minimum (1x) size. A size of 1x means that each dot (pixel) on the screen will be printed as a single dot on the printer; for a typical dot-matrix printer, this means that an image that fills the screen will print as a 1 to 2 inch square. By combining this print option with the Expand Image command, it is possible to print images up to the entire width of the paper on most dot-matrix printers.



Indentation: The number of dot-widths to indent the left edge of the image. (Measured from the left edge of the available printing area.) This print option also affects the left margin in Typewriter Mode, so that typed text will line up with the most recently printed image.

Mirror Image: If set to YES, the image will be printed as a flopped (left-right) version of what you see on the screen.

Negative Image: If YES, a negative of the image will be printed (white-on-black instead of black-on-white). Note that printing an image this way will usually mean printing many more dots, which means that 1) the image will take much longer to print; 2) it will use up more ink; and 3) it will cause more wear and tear on your printer.

Bold Printing: If YES, each dot is printed twice for extra darkness. This is a good way to print extra-dark images to be copied or printed from, and it is also a

good way to get a little more use out of a ribbon or ink cartridge that is beginning to run out.

Repeats Across: The number of times to repeat the image horizontally. Copies of the image are printed side-by-side, across the page, limited only by the width of the paper.

Flip-Flop: If YES, every 2nd repeat across will be a mirror image. This option is useful for borders and comical effects.

Repeats Down: The number of times to repeat the image vertically, limited only by the length of the paper. When combined with Repeats Across, this can be used to print a pattern of repetitions of a single image.

Printer Type: Specifies the type of printer currently being used. If you have set the default printer (as explained in Chapter 2), this option only needs to be changed if you are using SCS-Draw with a different printer than you normally use. For a list of possible printer selections, refer to Appendix A.

CTRL/T -- Typewriter mode. This command allows you to type lines of text to be printed immediately on the printer. Each line of text will start printing at the left margin specified by the Indentation option. To end Typewriter mode, press RETURN rather than typing additional text. (The LINE FEED key can be used in Typewriter Mode to leave a blank line.)

Note that you must press RETURN, and not ESC, to get out of Typewriter mode. This is because there may be times when you want to send an ESC to the printer in Typewriter mode. For example, you might want to print a caption in boldface text on your Epson printer, which means that you would type ESC E at the start of the line and ESC F at the end.

ESC ------ Return to the sketchpad.

The Line Command

The Line commands allow you to draw lines by

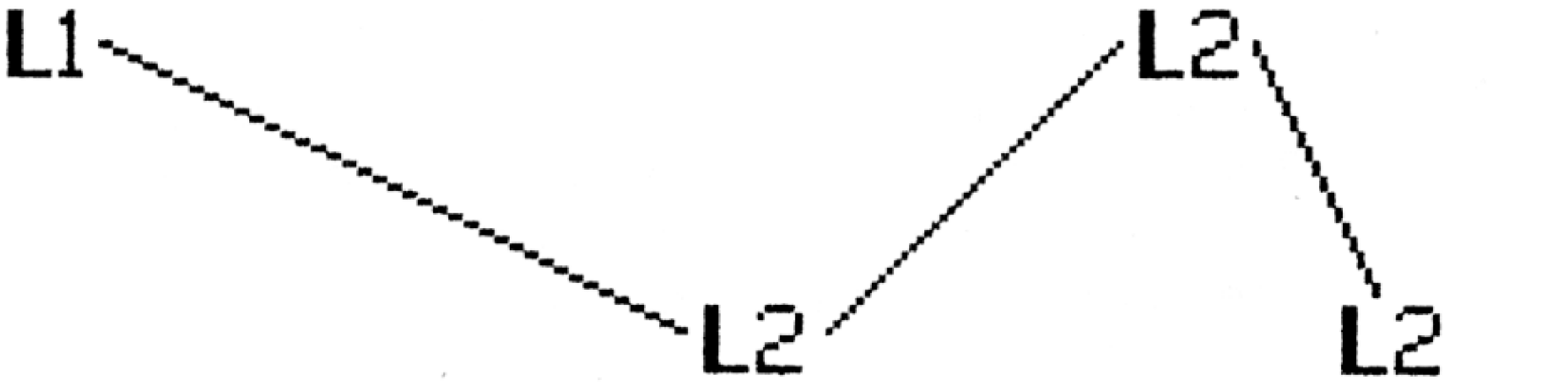
specifying the beginning and ending points of the line.

Each line command requires two keystrokes, and the first keystroke is always the L key.

L1 -- Begin a line. Marks the current cursor position as the beginning of a line to be drawn.

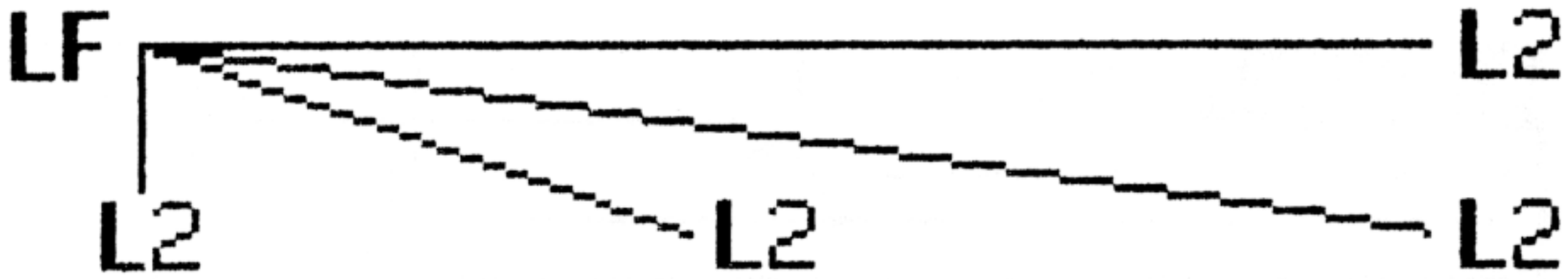
L2 -- End a line. The line will be drawn in the current drawing mode; if the current mode is Move, the line will be drawn in Draw mode (black).

Additional L2 commands will each draw a line from the previous line's endpoint, as shown below.



To draw more than one line from the same starting point, use the LF command.

LF -- Set fixed endpoint for a line. This command is the same as L1, except that all subsequent L2 commands will draw lines from this point (instead of the previous line's endpoint). The fixed endpoint will be cleared by the next L1 or LF command.



The Rectangle Commands

The Rectangle commands allow you to draw rectangles by specifying two opposite corners. Three different types of rectangles can be drawn: a simple rectangle, a filled rectangle, or a rectangle with diagonals (lines connecting opposite corners). The Rectangle Fill command can also be used to erase a section of the sketchpad, by marking a rectangle and filling it in Erase mode.

Each Rectangle command requires two keystrokes, and the first keystroke is always the R key.

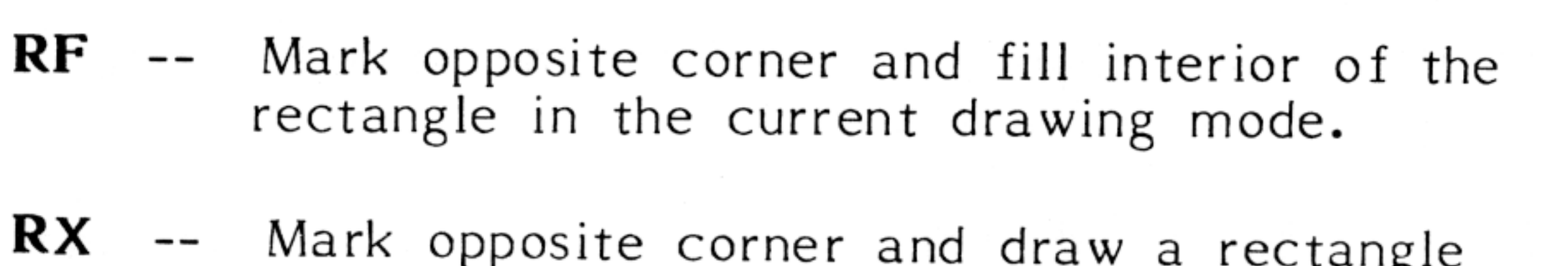
R1 -- Mark one corner of a rectangle. This may be any of the four corners.

R2 -- Mark opposite corner and draw the rectangle. The rectangle will be drawn in the current drawing mode; if the current mode is Move, the rectangle will be drawn in Draw mode (black).

RF -- Mark opposite corner and fill interior of the rectangle in the current drawing mode.

RX -- Mark opposite corner and draw a rectangle with diagonals in the current drawing mode.

The R1 command fixes the position of one corner of the rectangle, so additional R2, RF or RX commands will use the first R1 position to draw from, as shown below.



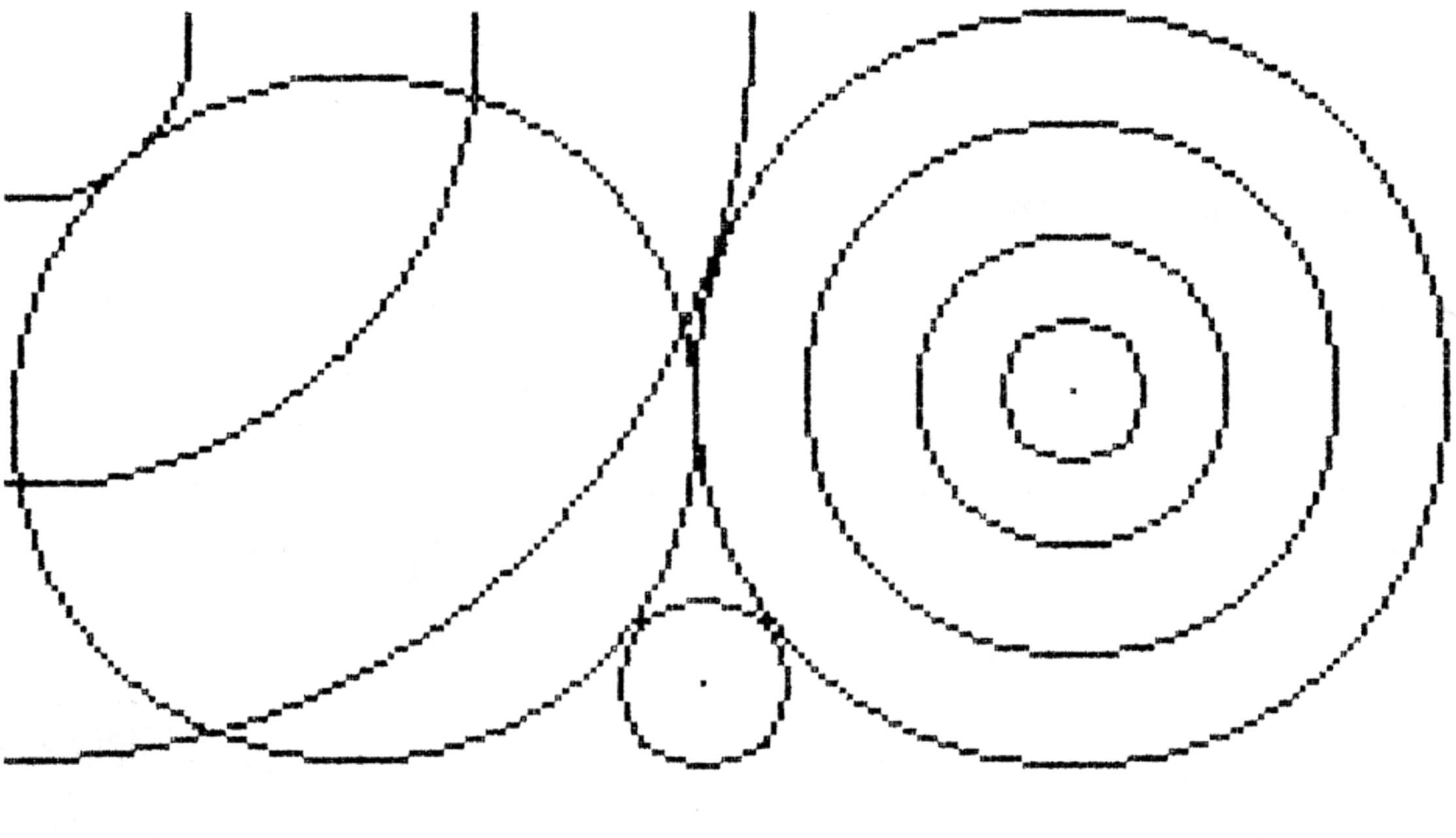
The Circle Command

The Circle command allows you to draw circles by specifying the center of the circle and a point on the circle.

Each Circle command requires two keystrokes, and the first keystroke is always the C key.

C1 -- Mark the center of the circle.

C2 -- Mark the edge of the circle and draw it in the current drawing mode; if the current mode is Move, the circle will be drawn in Draw mode (black).



Circles can extend off the edge of the sketchpad, but they will be clipped at the edge. Circles can not be greater than 510 dots across, but this rarely happens because the sketchpad is only 362 dots across. If you attempt to draw a circle larger than 510 dots across, a warning message appears and no action is taken.

Are Your Circles Round? Some Kaypros, such as the 2'84 and 4'84, have monitors that are slightly "stretched" vertically. This will make circles look like ovals on the screen, although they will print as circles. (Note that everything you see on the screen will be stretched. For example, a square will look more like a rectangle.)

If you have a newer Kaypro 10 or 2X, your screen will display circles and squares correctly. There may still be a slight distortion when you print your drawings, however, because some dot-matrix printers do not have the ability to print "1:1 graphics." (1:1 graphics means that dots can be printed with equal horizontal and vertical spacing.) SCS-Draw will print with 1:1 spacing on any printer that has this capability.

The Text Command

The Text command can be used to enter text on the sketchpad, thus combining text with graphics. The text is always drawn in Inverse mode. If the background is black, the text will be green. If the background is green, the text will be black.

To enter text in the sketchpad, follow these steps:

1) Position the cursor on the sketchpad where you want the text to appear. The cursor position will be the lower left corner of the first character of text.

2) Press T.

3) Enter the text to be displayed and press RETURN.

The text will then be displayed. If the text is

too long to fit on the sketchpad, it will be cut off after the last character that fits entirely on the sketchpad.

Changing Text Styles

There are four different text styles (fonts) available in SCS-Draw. The CTRL/T command changes the current font selection.

When you press CTRL/T, a pop-up menu will appear that shows the four fonts, with the current font highlighted (see below). Use the arrow keys to change the font selection, and then press ESC or RETURN to resume drawing.

Regular Font ——————— AAAaaa

Italic Font ——————— *BBBbbb*

Bold Font ——————— **CCCccc**

Little Font ——————— DDDddd

1234567890-=`!@#$%^&*()_+~[{}]":;',?

The Block Commands

Block commands allow you to move, copy, overlay, or invert sections of the image that is currently in the sketchpad. Each Block command requires two keystrokes, and the first keystroke is always the B key.

There are two steps in using a block command:

1) Define the block.

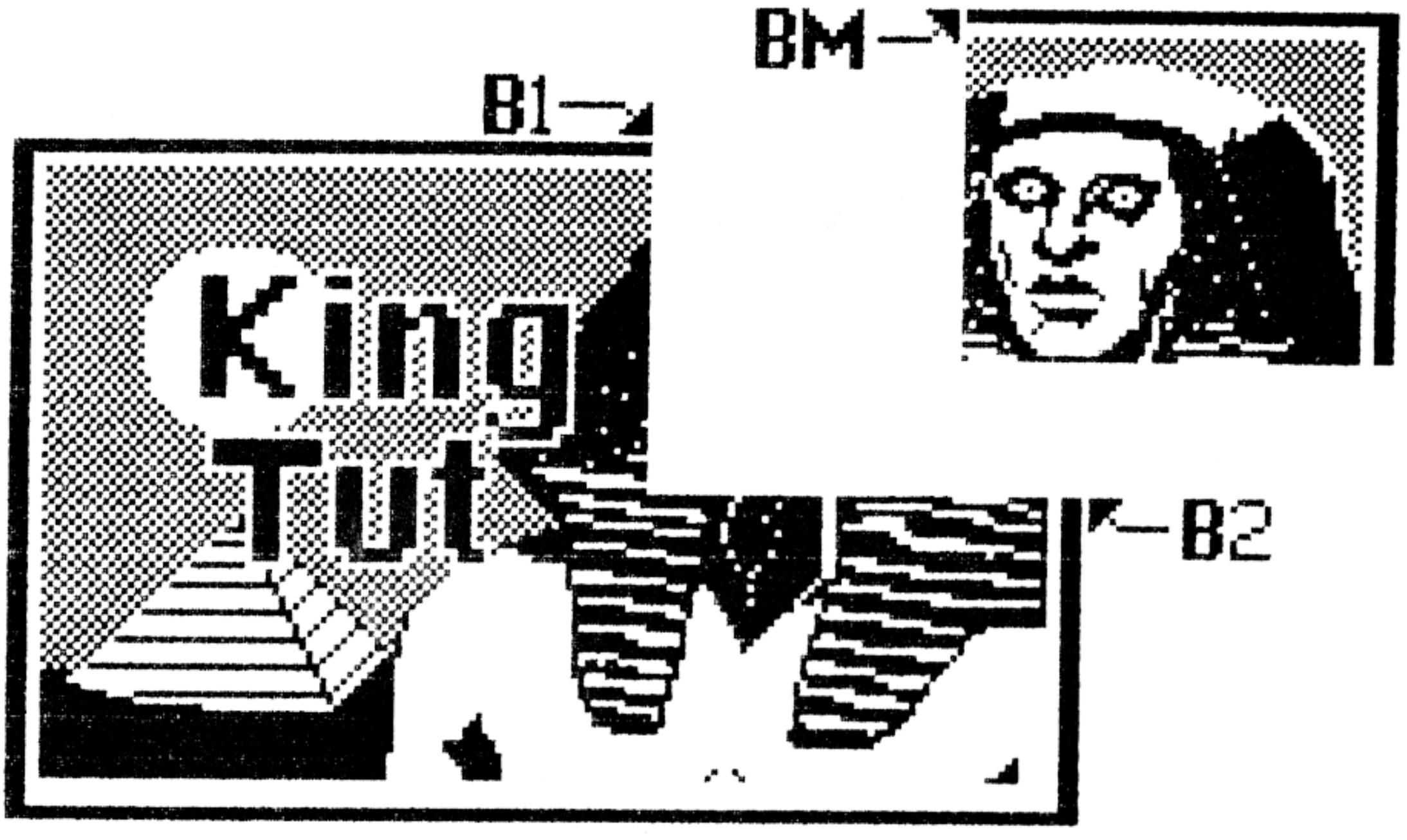
2) Specify the block command to be performed.

The B1 and B2 commands are used to define the block:

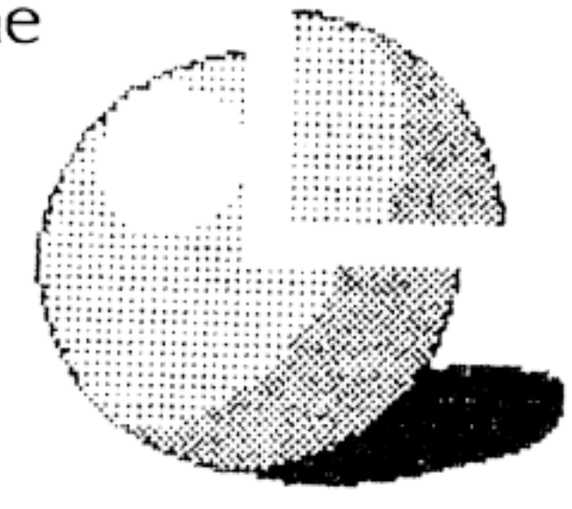
B1 -- Mark one corner of the block.

B2 -- Mark opposite corner of the block.

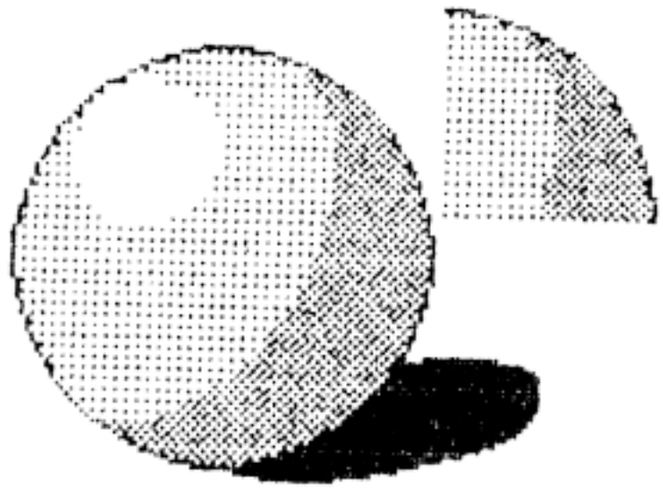
After you define the block, you can use the commands listed below to manipulate the block. Note that all of the these commands use the current cursor position to determine where an action is to be performed. This means that you must move the cursor to the **top left corner** of the destination block before issuing these commands.



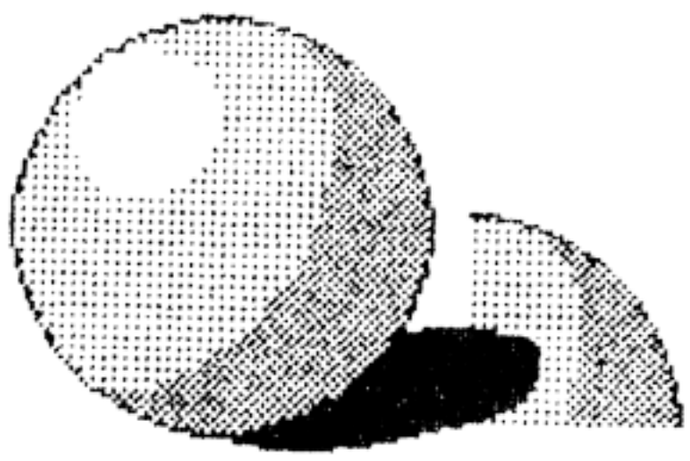
BM -- Move the marked block to the current cursor position. The original block is erased, and a copy of the block is placed on the sketchpad at the current position.



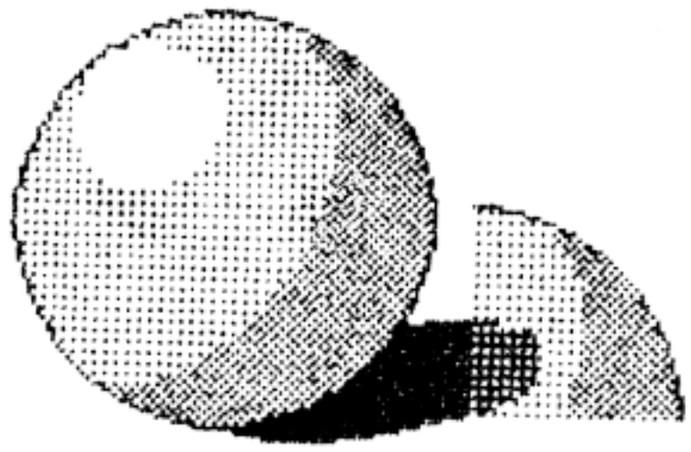
BC -- Copy marked block at the current cursor position. Same as BM, but the original block is not erased.



BO -- Overlay the marked block at the current cursor position.



BI -- Invert marked block at the current cursor position. For example, a black image inverted on a part of the sketchpad with a black background becomes a green image.



The difference between Block Overlay and Block Invert is very subtle. Block Overlay combines the marked block with the existing image at the new block position, simply putting one image on top of another image, like a double-exposed photograph. Block Invert changes the moved block according to what was already in the new block position. Black dots in the moved block stay black where the background was green, but change to green where the background was black.

The Fill Command

The Fill command allows you to fill any enclosed area on the sketchpad with one of 23 built-in patterns or a user-definable pattern -- one that you define. The area to be filled **must** be completely enclosed, or the filling pattern will "escape" and fill other areas of the sketchpad.

Follow these steps to fill an area on the sketchpad with a pattern:

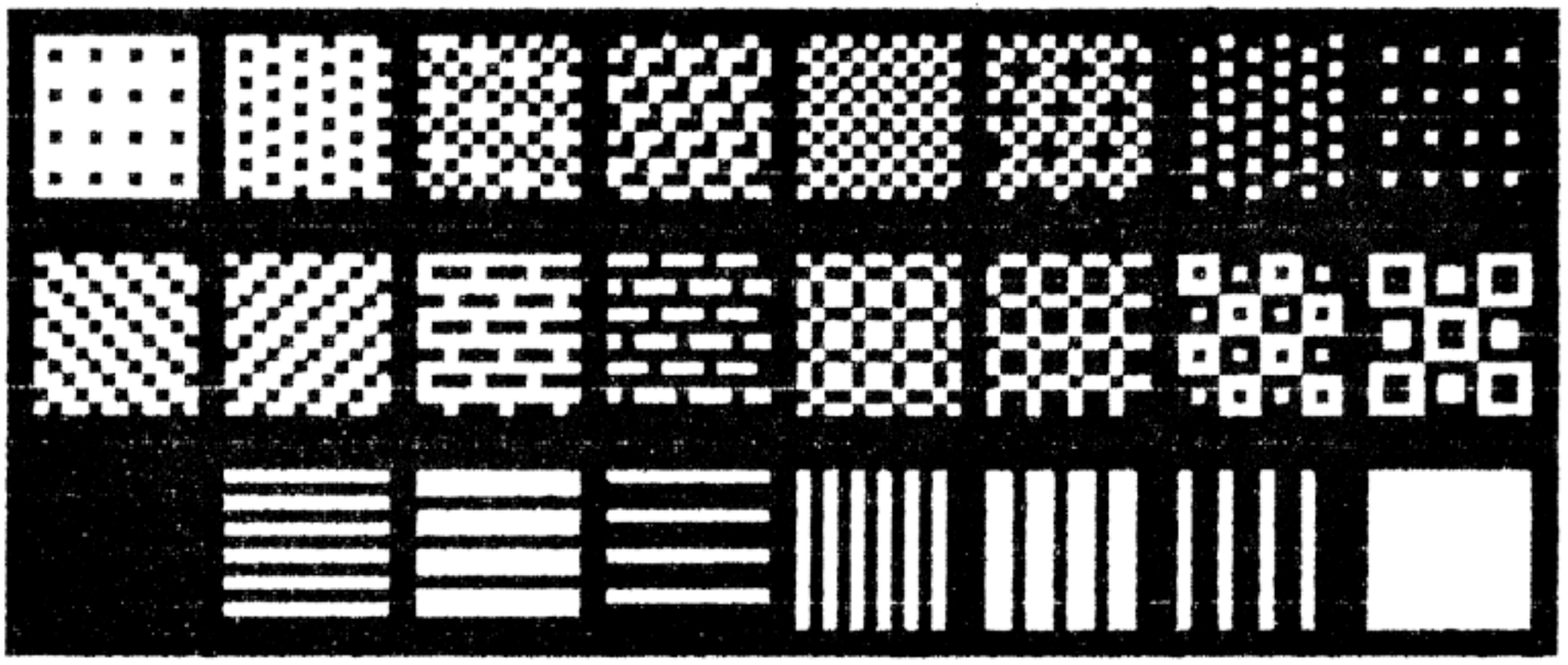
1) Position the cursor within the area to be filled.

2) Press F to view the patterns available. (You can press F twice quickly to avoid the 1-second delay for pop-up menus, as explained in Chapter 2.)

3) Use the arrow keys to select a pattern.

4) Press RETURN to fill the area with the selected pattern.

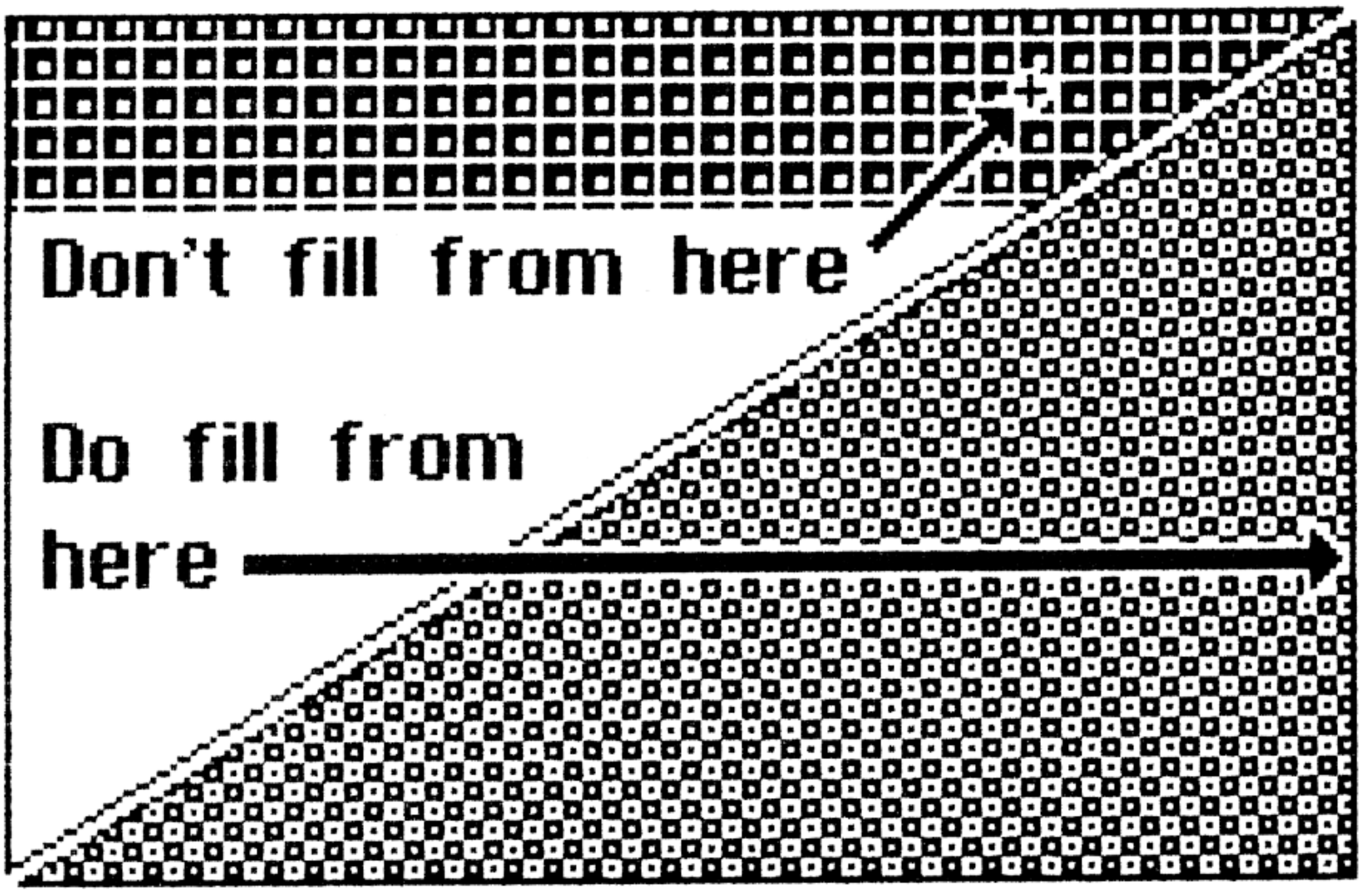
5) If you wish to fill another area with the same pattern, simply position the cursor within the area and press F followed by RETURN.



Special Note on Using the Fill Command:

If the fill command doesn't fill the entire enclosed area, move the cursor to the unfilled section and press F followed by RETURN to fill it. For areas with unusual shapes, you may have to repeat this procedure more than once.

A good way to fill as much of an area as possible on the first try is to position the cursor at the point where the enclosed area is tallest.



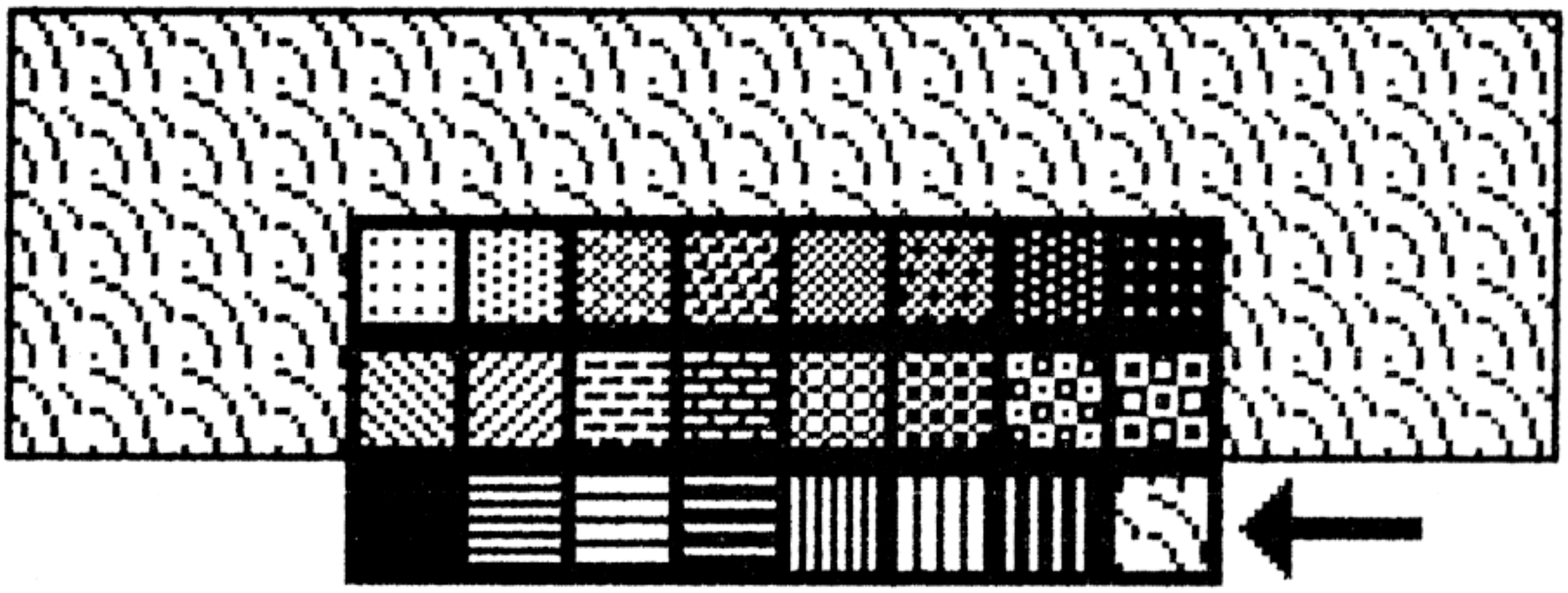
Changing the User-Definable Pattern

The pattern farthest to the right in the bottom row of the pattern menu is the user-definable pattern. When you start up SCS-Draw, this pattern is blank, but you can change it at any time with the Fill User-definable pattern command. Follow these steps to define or re-define the pattern:

1) Put the pattern that you want to use in the upper left corner of the current window of the sketchpad. You can do this by simply drawing the pattern there, by moving the window to a pattern within the sketchpad, or by moving a block containing the pattern to the upper left corner with the Block Move command.

2) Press F, and then press U (for User-definable pattern). This will pick up the pattern from the sketchpad and place it in the pattern menu. The pattern is defined as a block 12 dots tall and 12 dots wide.

After you define the pattern, you can erase the area it was picked up from on the sketchpad, because a copy of it is stored separately with the other patterns.



The Delete Image Command

The DEL key is used to erase the image currently in the sketchpad. This command only affects the sketchpad -- it does not delete the image from the image library if it has been saved on disk.

To erase the current image from the sketchpad, press the DEL key. A message will appear on the screen, asking whether you are sure that you want to do this. Press Y to erase the image, or any other key to resume drawing.

The Quick Move Command

This command allows you to quickly move the cursor to various positions on the screen. Follow these steps for Quick Move:

1) Press the TAB key.

2) Press one of the keys 1-9 on the numeric keypad. The cursor will immediately move to the corresponding position on the screen. (To see exactly where these positions are, press the TAB key twice and each of the positions will be marked with the corresponding number key.)

The Quick Move command can also be used to move the cursor straight to the edge of the screen (from the current cursor position). To use this feature of the Quick Move command, follow these steps:

1) Press the TAB key.

2) Press an arrow key to indicate the direction that the cursor is to be moved. The cursor will then

move straight to the edge of the screen in the indicated direction.

NOTE: This is the only time that SCS-Draw makes a distinction between the arrow keys and the corresponding keys on the numeric keypad.

The Quick Print Command

Quick Print allows you to quickly print a copy of the image currently in the sketchpad. The print options are all ignored, except for the Printer type selection. This command is useful if you want to get a quick look at the entire image in the sketchpad while drawing or editing, or if you don't need any of the print options.

To use the Quick Print command, hold down the CTRL key and press P. The image will begin printing immediately.

If you are using a daisywheel printer, a pop-up menu will apear on the screen while the image is printing. This menu allows you to press any key to interrupt the printing. (For dot-matrix printers, the image usually prints so quickly that there is no need to interrupt it.)

The Expand Image Command

This command allows you to expand (enlarge) the image on the sketchpad. The image is expanded to twice its original size, either horizontally or vertically.

This command is not reversible (there is no "Shrink

Image" command). If you want to have a copy of the current image -- at its current size -- for future use, save the image on disk before using this command.

To expand the image, press the X key and then press one of the arrow keys. The UP or DOWN arrow will expand the image vertically. The RIGHT or LEFT arrow will expand it horizontally.

If the image is too large to be expanded within the sketchpad, a warning message will appear. You may then choose to abort the expansion (ESC) or expand the image and clip the excess (RETURN).

One of the most common uses of the Expand Image command is to "smooth" an enlarged image. In the example below, the first image was printed with an enlargement of 4x (using the Enlargement print option). The second image was expanded in the sketchpad (with the Expand Image command), then the jagged edges were edited, and the expanded image was printed with an enlargement of 2x.

The Measure Command

The Measure command is used to measure the distance (in dots) between two points in the sketchpad, or to compare two distances in the sketchpad. To measure the distance between two points, follow these steps:

1) Move the cursor to one of the points.

2) Press the = (equal sign) key, and then press the **1** key.

3) Move the cursor to the second point.

4) Press the = (equal sign) key, and then press the **2** key.

A pop-up menu will appear in the center of the screen, displaying the horizontal and vertical distances between the two points.

The results of the last (previous) Measure command are displayed in parenthesis immediately after the current measurements, for comparison. This allows you to compare two distances without memorizing any numbers or distances.

The Change Name Command

This command allows you to enter a name for the current image, to be displayed in the sketchpad title at the center of the top of the screen. To change the current image name, just press CTRL/N and then enter a new name for the current image.

Blank image names are not displayed, so you can

remove the sketchpad title by entering a blank name with this command.

Note that this command is different from the N command in the Save/Select menu, which changes the name of an image in an image library on disk. The Change Name (CTRL/N) command only changes the name currently on the sketchpad. This new name will be used, however, when the current image is saved in an image library.

The Show Size Command

Pressing the **?** (question mark) key will display the dimensions of the current image (in dots), along with the top and left margins. The margins are the distances from the edge of the image to the edge of the sketchpad.

It's a good idea to save images with top and left margins of 0, because this will take up the least amount of disk space in your image libraries. The next command (Align Image) will automatically set the margins to 0.

The Align Image (or Lasso) Command

This command moves the image currently in the sketchpad to the top left corner of the sketchpad. This can be useful for saving disk space, as described above (under Show Size).

To use the Align Image command, you enter the **^** (carat) symbol (by pressing SHIFT/6).

An important feature of the Align Image command is

that it sets the block-command markers to surround the entire image. (This is where the other name, "Lasso Image," comes from.) This feature can be useful for moving an entire image within the sketchpad. If you want to move the entire image to the right 10 dots, for example, enter an Align Image command (^), followed by the right arrow key 10 times, followed by a Block Move command (BM). This saves you the trouble of defining a block that surrounds the entire image.

The Line Feed Command

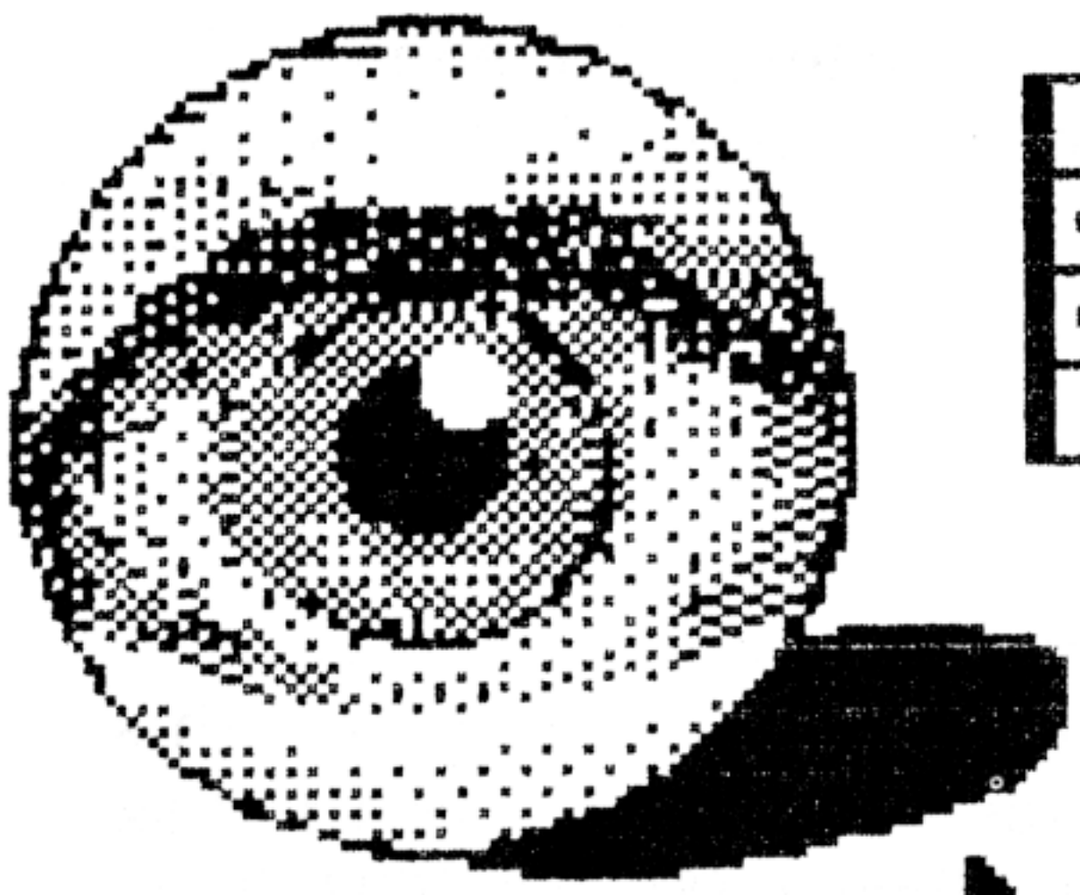
The LINE FEED key advances the paper in the printer one line. This command will work in the sketchpad or the Print Image menu. It is useful for positioning the paper before printing an image.

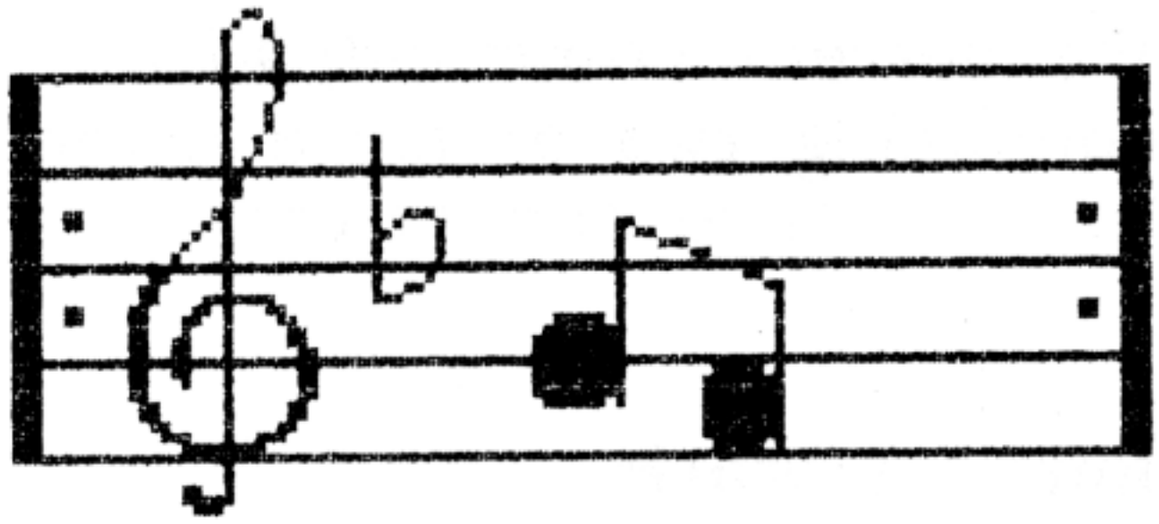
The Quit Command

This command is used to exit the SCS-Draw program. If you want to save the image currently in the sketchpad, do this before quitting.

The ESC key is used for the Quit command. Press the ESC key, and a message will apear at the bottom of the screen asking whether you're sure that you want to quit. Press Y to return to the CP/M prompt, or any other key to resume drawing.

NOTE TO EXPERIENCED CP/M USERS: SCS-Draw cannot be re-executed with a 0-length .COM file, so you MUST save your work before quitting.





Chapter 4

Mastering SCS-Draw

There are two steps to learning SCS-Draw. The first is learning the commands, which is what you have done by going through chapters 2 and 3. The next step is learning exactly when each type of command is most appropriate and efficient, so that you will get the most out of the time you spend drawing with SCS-Draw.

It is obvious that the Line command should be used to draw a line (rather than drawing it dot-by-dot). But what about more complicated tasks, where the best procedure may not be so obvious? Say, for example, that you want to fill an area with a modified version of a pre-defined pattern -- what would be the quickest and easiest way to do this?

This is the type of information presented in this chapter -- specific techniques for solving common problems. In some cases, this means simply using

the correct command; in other cases, it means combining two or more commands in a special way to save time and effort.

Image Libraries

SCS-Draw image libraries are organized for fast access to any image. To take full advantage of this organization and make the most efficient use of disk space, use the default image library (SCRATCH.DRW) as a temporary workspace while you are drawing. Then use other image libraries (that you name) as permanent libraries for images you want to keep.

Making it a habit to always use SCRATCH.DRW as your temporary workspace has several advantages. You need only enter the command DRAW to start the program, and SCRATCH.DRW is automatically available for your working drawings. You can save copies of various versions of the same drawing in SCRATCH.DRW, and quickly return to a previous version if you make a mistake. Then, when you have finished a drawing, you can use the L and A commands from the Save/Select menu to add the new drawing to a permanent image library.

To make the best use of this capability, you should store only temporary images in SCRATCH.DRW. This way, you can erase SCRATCH.DRW any time you need more space on your disk. (To erase SCRATCH.DRW, exit from SCS-Draw and use the CP/M command ERA. The program will create a new SCRATCH.DRW the next time you start SCS-Draw.)

This approach will also help you avoid adding an unfinished or unwanted image to your permanent image library. If you do add an image you decide

not to keep, however, you can simply replace the image with the next image you create, using the Replace Image command. One technique that works well is to change the name of unwanted images to a blank. (The N command in the Save/Select menu will let you enter a blank for an image name.) Then, whenever you create a new image, look for a blank spot for it in your permanent image library.

When you use the Replace Image command to replace a large image with a smaller one, the total size of the image library will not change. This is important to know, because it means that you cannot create more free space on a disk by replacing a large image with a smaller one.

The amount of space that a given image takes up in an image library is determined by its position in the sketchpad. For this reason, you should always do the Align Image (^) command before saving an image, to move it into the top left corner of the sketchpad. This will assure that the image takes up the least amount of disk space.

Block Commands

Efficient use of the Block commands can make a big difference in how quickly you can create complicated images. The following are common techniques for saving time with block commands:

1) If you know how far you want to move a block, mark the lower right corner of the block first (with B1). Then mark the top left corner with B2. Now you can move the cursor the known distance from its current position and press BM to move the block. (If you define the top left

corner first, you will have to return to that point before moving the block.)

2) The Block Move command moves the block markers to the new block position, so you can make fine adjustments in the position of the block. For example, if you move a block and then see that it should be one pixel lower, just press the down arrow and then type BM again.

3) Use the Align Image (^) command whenever you want to move the entire image in the sketchpad. The Align Image command sets the block markers to surround the entire image, so you don't have to set them yourself. Just press ^ (for Align Image), and then move to the desired position and type BM (for Block Move).

4) If you are moving a block that doesn't have a black pixel in the top left corner, put a black pixel at that position for a reference point. This will give you a point to measure from if you need to adjust the position of the block after it is moved. After you have verified that the block is where you want it, you can erase the added pixel.

User-defined Fill Patterns

Like the Block Move command, the user-defined fill pattern is more useful if you know a few shortcuts. The following observations will help you get the most out of this command:

1) After you define the user pattern, it will stay the same even after you erase the sketchpad. This allows you to store all of your favorite fill

patterns in an image library. When you need to use a pattern you've already defined, save the current image and then change to the pattern image library. Select the desired pattern and read it in with the FU command. The pattern will be placed in the pattern menu for your use. Then return to your original image library and retrieve the original image.

2) You can temporarily modify one of the pre-defined patterns by filling the top left corner of the screen with the pattern, editing it, and then using the FU command to read in the pattern. Note that this technique can be used to shift a pattern so that it will match an area that has been filled and then moved.

Combining Images

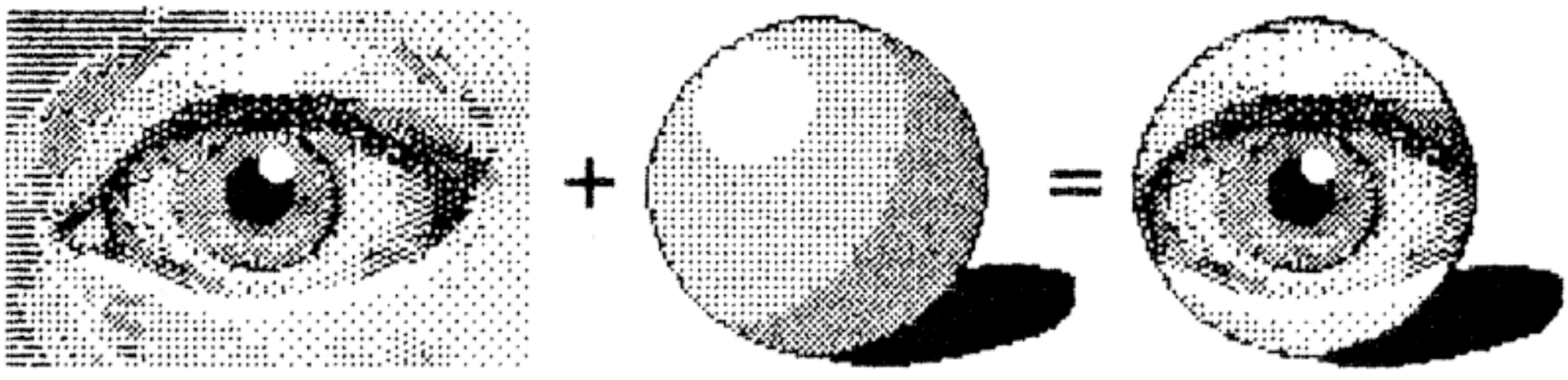
The M command in the Save/Select menu gives SCS-Draw the ability to combine two images in the sketchpad. The following techniques work well with this command:

1) Carefully plan out where the two images should be in the sketchpad, and then save temporary copies of each image in the correct position. You can then combine these images by using the M command to merge one image while the other is in the sketchpad. Use the Block Move command for final adjustments after both images are in the sketchpad.

2) If you know the size and position of an image to be merged with the current image, just move the current image to a position that doesn't overlap with the image to be merged and merge the image.

Use the Block Move command for final adjustments after both images are in the sketchpad.

The Merge command actually overlays the images, like the Block Overlay command. Because of this, you can merge two images, clean up the overlap, and merge again to create effects like the one shown here.

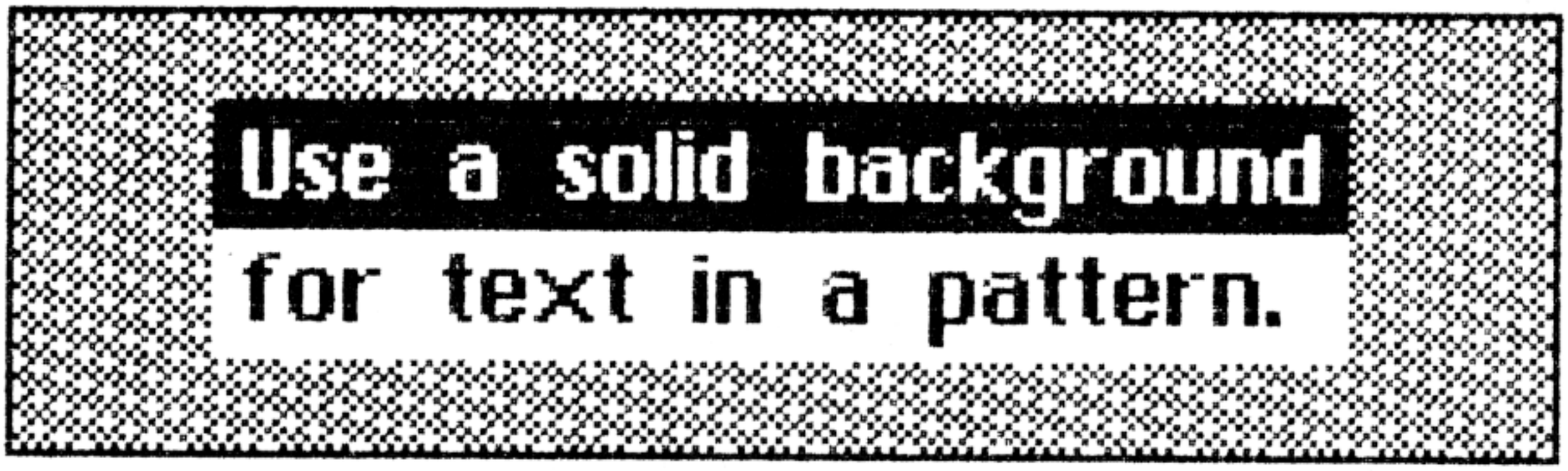


Mixing Text and Graphics

There are two ways to mix text and graphics with SCS-Draw. One way is to use the Text command to enter the text directly in the sketchpad. The other is to use Typewriter Mode to print the text around a printed image.

Use the Text command if you want to print text inside of an image, or if you want to manipulate the text with drawing commands like Block Move and Expand Image. Use Typewriter Mode if you want to use your printer's character sets.

The Text command always draws the text in Inverse mode, so you can see it against a black or green background. You may have noticed, however, that this makes the text very hard to read when drawn in a pattern-filled area. You can make text much easier to read if you use the Rectangle Fill (RF) command to create an all-green or all-black rectangle for the text to appear in, as in the example at the top of the opposite page.



When you use Typewriter Mode to print text on the same page as printed images, you may find it easier to run the paper through your printer twice: print the text in the first pass, and then print the images in the second pass. By using a reference point on your printer to line things up, you can print an image in the middle of some text. (In fact, that is how many of the pages in this manual were printed. For example, look at pages 8, 9, and 10 of Chapter 1, or any of the chapter openers. The text on those pages was printed on a Kaypro/Juki letter-quality printer, and then the graphics were added with an HP Thinkjet printer.)

Printing Large Images

SCS-Draw can print very large images, up to several pages in length. To print an image as large as possible, use the X command to expand the image in the sketchpad before printing (if there is room).

To print a long banner, break it up into small sections (for example,

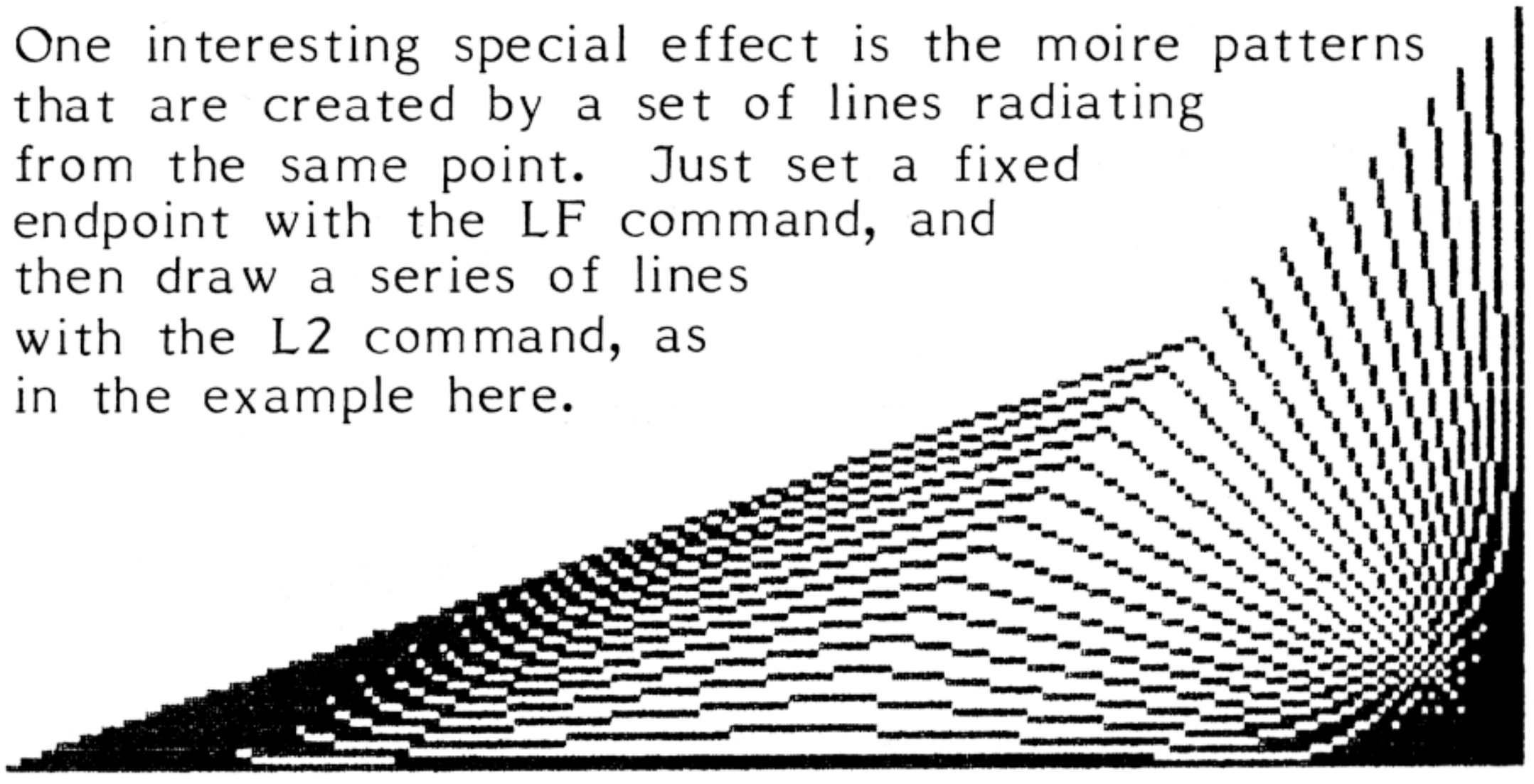
individual words), drawing and printing each section as a separate image. You can expand these sections in the sketchpad and then print them with the Rotation and Enlargement print options. After printing each word, use the Line Feed command to advance your printer to the next word's position, and then expand and print the next word. Note that SCS-Draw lets you put drawings (not just text) in a long banner, which most banner-printing programs can't do.

Some dot-matrix printers leave horizontal streaks in solid black printed areas. If you have this problem, try using the Rotation print option to rotate the image for printing. This will make the streaks go in a different direction, and if this makes the streaks shorter (because of the shape of the image), they may be less noticeable.

Special Effects

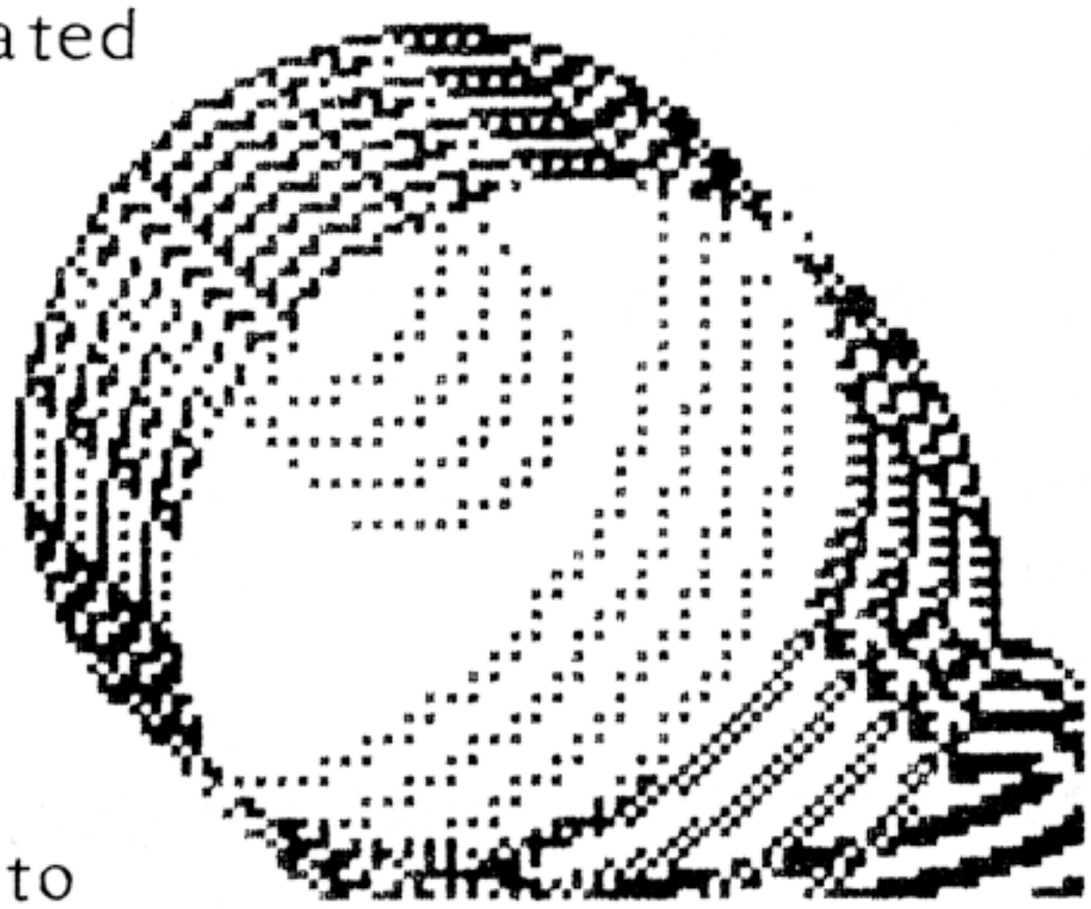
In addition to their intended uses, many of the drawing commands have other effects that can be useful in some situations.

One interesting special effect is the moire patterns that are created by a set of lines radiating from the same point. Just set a fixed endpoint with the LF command, and then draw a series of lines with the L2 command, as in the example here.



A good application of the moire effect is to create border patterns like this one.

Another type of interesting effect can be achieved with the Block Invert command. This effect gives the impression of an image being "smeared." The image shown here was created by defining a block around the ball image (from SAMPLE.DRW), moving the block two pixels down and to the right, and then repeatedly using the Block Invert command to invert the ball with itself. The Text command can create similar effects to the Block Invert command, because text is always drawn in Inverse mode.



This mosaic shows the effect of filling rectangles in Inverse mode. Inverted areas can make an image look more complex without getting "busy." This image has five areas that have been inverted by filling rectangles in Inverse mode.

Undoing Various Commands

The old saying "an ounce of prevention is worth a pound of cure" is good to remember when you are about to make a major change to an image you're working on. Always save a copy of the image in SCRATCH.DRW before making a big change, so that you can retrieve the old version if the change doesn't turn out the way you wanted.

Even if you take this precaution, however, there will be times when you need to undo a command. There are several ways to do this, depending on the particular command.

The most basic and most general type of undo is to simply erase a rectangular section of the drawing with the Rectangle Fill (RF) command in Erase mode. Note that erasing a rectangle takes the following two steps:

1) Type R1 to mark one corner of the rectangle.

2) At the opposite corner, type ERF to go into Erase mode and fill the rectangle.

After you use this procedure a few times, it will become fairly automatic. Just remember to get out of Erase mode when you're done, to avoid accidentally erasing other parts of the sketchpad that you pass over.

If you draw a circle or rectangle in the wrong place, you can easily erase it. With the cursor positioned where you pressed C2 or R2, simply switch to Erase mode and repeat the C2 or R2 command.

If you draw a line in the wrong place, the method

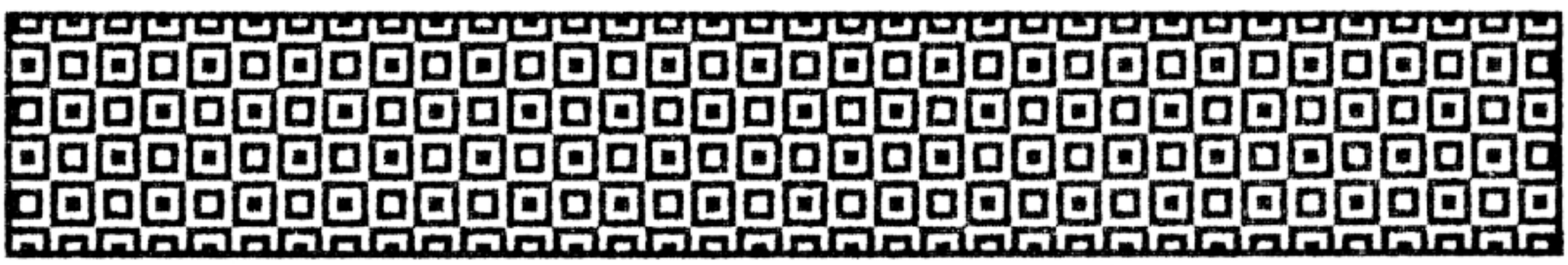
for erasing it depends on whether you used LF or LI to draw the line:

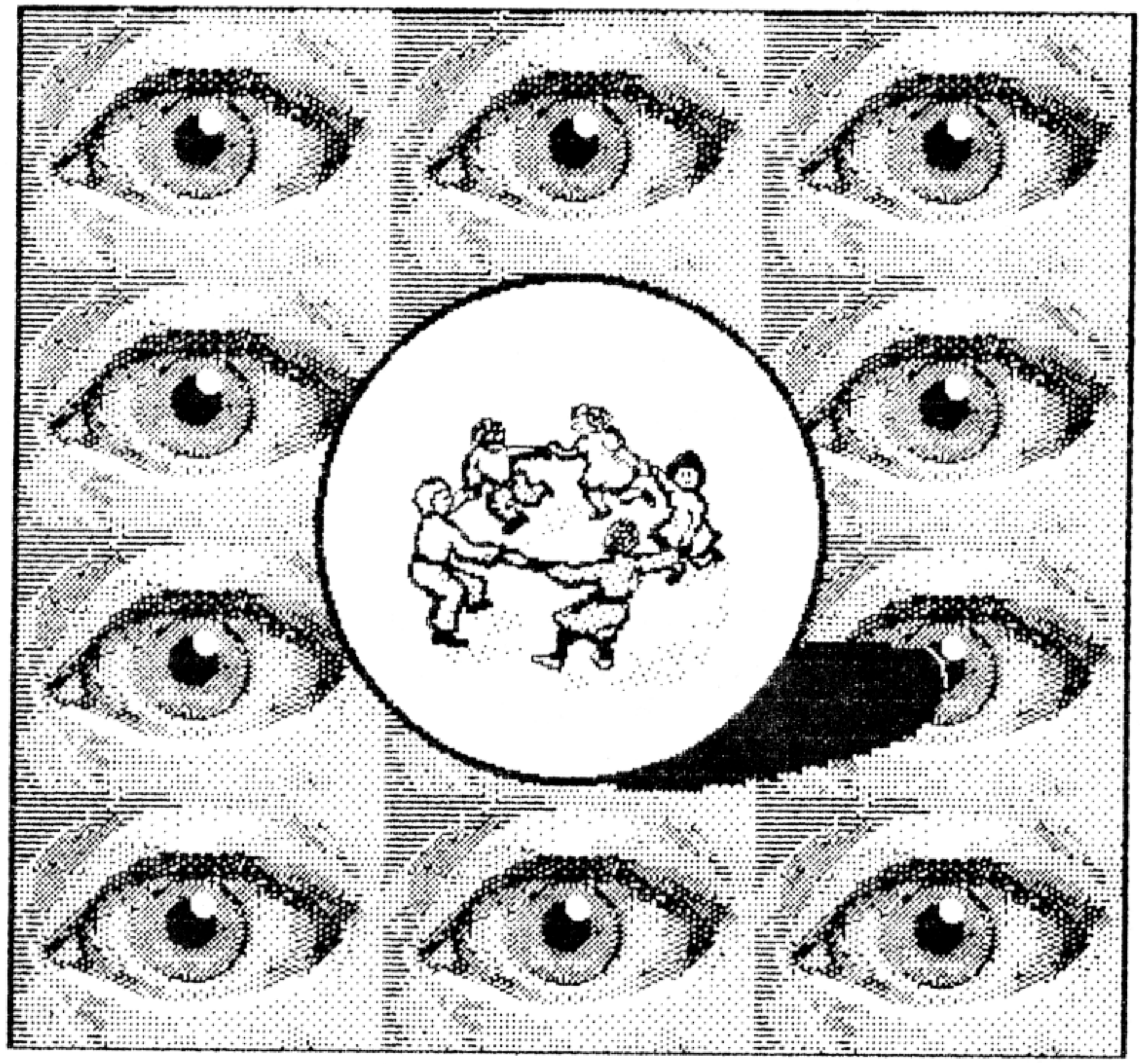
1) If you used LF to start the line, simply switch to Erase mode and repeat the L2 command.

2) If you used LI to start the line, go back to the beginning of the line and press LI again. Then go to the end of the line, switch to Erase mode, and press L2 again.

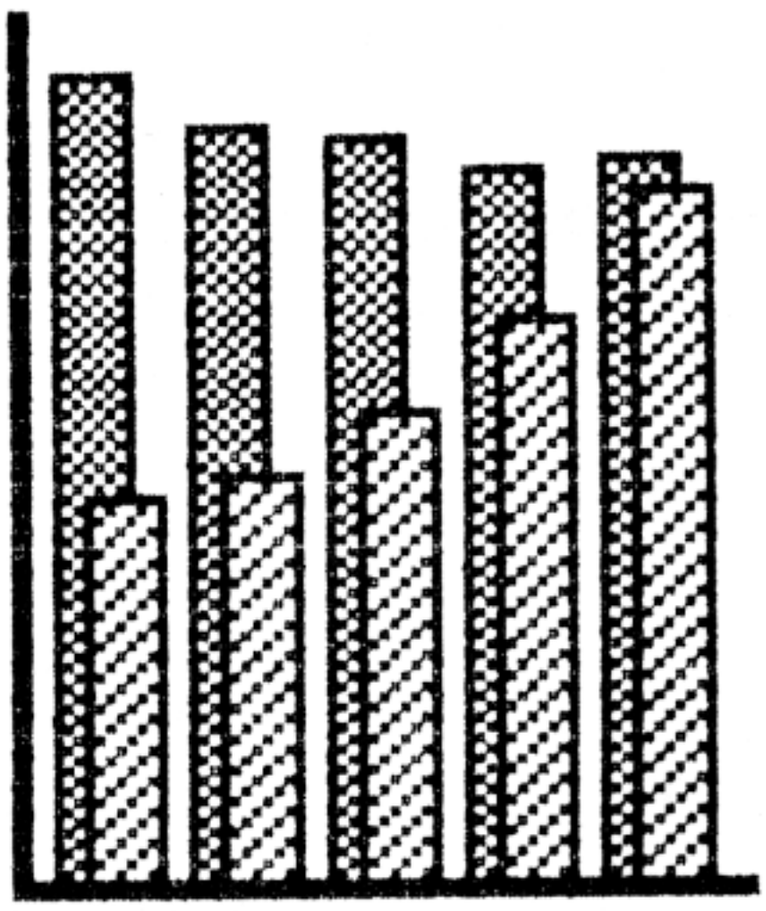
To draw lines, circles, and rectangles that overlap part of the existing image, you can draw them in Inverse mode to test the current position. If the position doesn't look right, just repeat the drawing command (also in Inverse mode) and the original image will be restored. You can use this approach to try several different positions before placing a line, circle, or rectangle over part of the current image.

Text is the easiest command to undo. If you enter some text into the sketchpad and then decide to erase it, just re-enter the same text at the same position. Because text is always drawn in Inverse mode, re-entering the text will invert the original inverted text, erasing the text and restoring the original image. If you accidentally use the wrong font or wrong position when trying to undo some text, don't worry -- just type the exact same text again at the current position, which will undo the new mistake. Then try again with a different font or a different position (usually one pixel to the right or left).





The image above was created from some of the images that are provided in the sample image library (SAMPLE.DRW), by using the the techniques covered in this chapter. The image fills the entire sketchpad, so it is a good example of the total resolution that SCS-Draw offers (362 dots wide and 336 dots tall). You may want to try creating an image similar to this one, from the sample images or from your own drawings, to gain more experience with advanced SCS-Draw techniques.



Chapter 5

Applications

In addition to the fun that you can have just drawing and printing images, SCS-Draw has many practical applications. You can use SCS-Draw to prepare a chart or graph for a presentation; print a birthday card for a friend; design and print your business logo or letterhead; or make a sign or banner to hang on your wall.

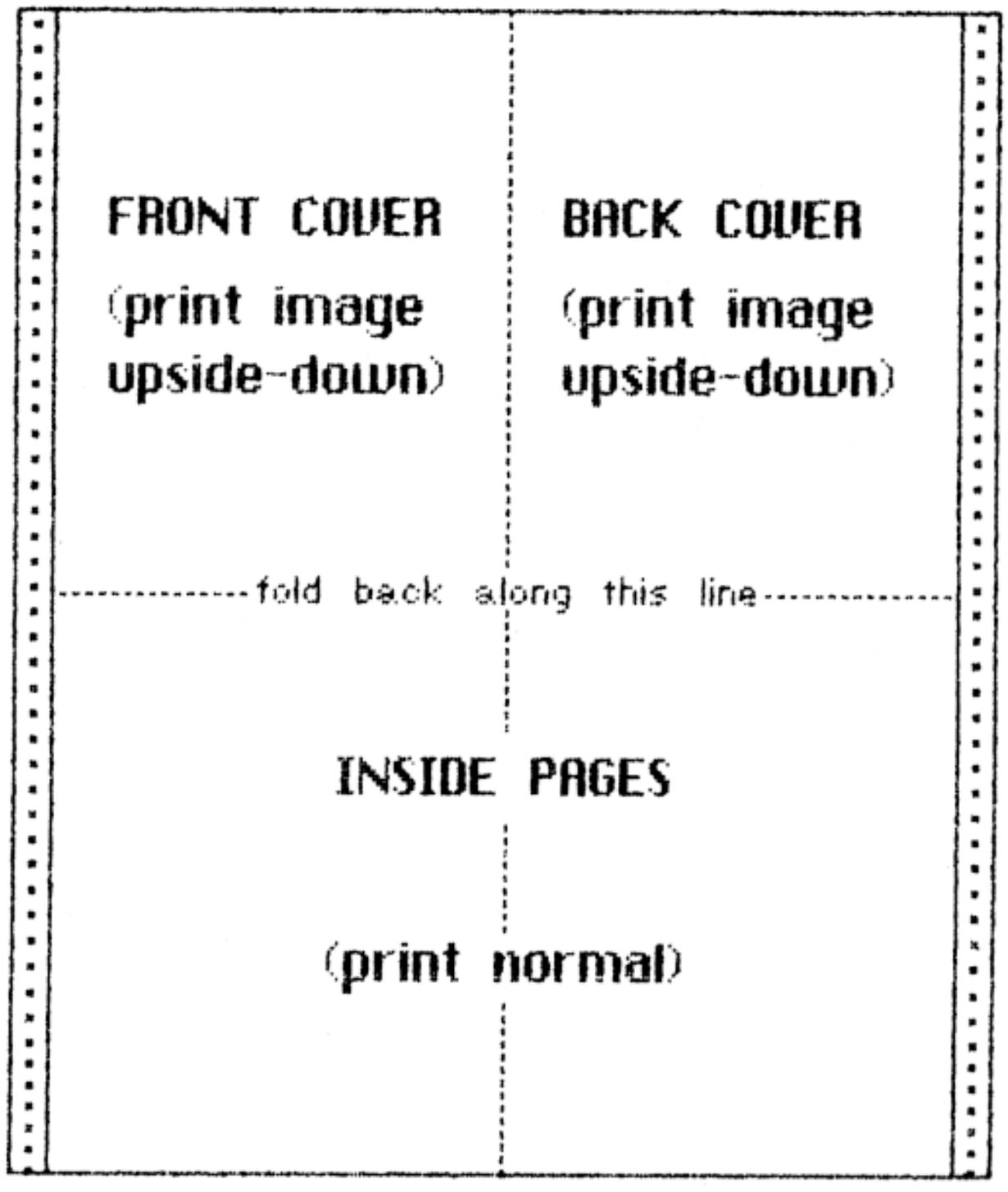
This chapter explains how to accomplish these types of tasks with SCS-Draw. Each of the examples uses images from the SCS-Draw sample image library, but you can easily substitute your own drawings if you wish.

You're holding in your hands a good example of something that you can do with SCS-Draw -- print an illustrated pamphlet, newsletter or manual. This User's Guide was entirely illustrated with SCS-Draw and was printed directly from the computer printout.

Greeting Cards/Invitations

Greeting cards of all types are a very popular use for SCS-Draw. The Rotation and Indentation print options allow you to print the front cover and inside pages of the card on one piece of paper, which can then be folded into a greeting card.

The diagram below shows the layout of a page that can be folded into a greeting card. The dotted lines show where to fold the paper. Note that the front and back cover images must be printed with upside-down rotation.



A few notes about greeting cards:

1) The exact indentation to be used depends on your printer. Try printing a test card, and then adjust the indentation to center the images on the pages.

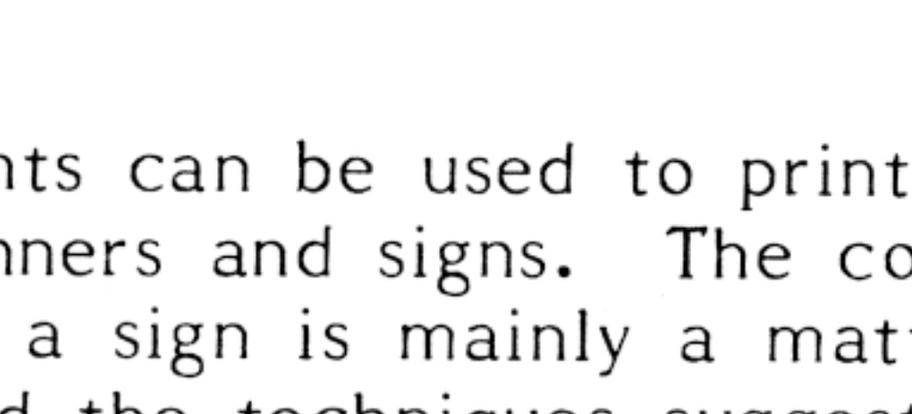
2) If you put separate images on the two inside pages, or if you put an image on both the front and back covers, you will have to run the page through your printer twice.

3) If you have a letter-quality printer, it may not support the Rotation print option. In this case, you can print a greeting card by first printing the inside pages. Then run the page through your printer upside-down to print the front and back cover images.

Banners and Signs

SCS-Draw's built-in fonts can be used to print a variety of types of banners and signs. The correct way to draw and print a sign is mainly a matter of taste, but you may find the techniques suggested here useful. (See also Chapter 4, under "Printing Large Images" and "Combining Images.")

You can enlarge text in the sketchpad (with the X command), and then smooth the edges to make large letters easier to read.



You can combine large and small print in a sign by expanding the larger text in the sketchpad and then entering the smaller text in the expanded image, as

shown in the example here.

Expanded Text

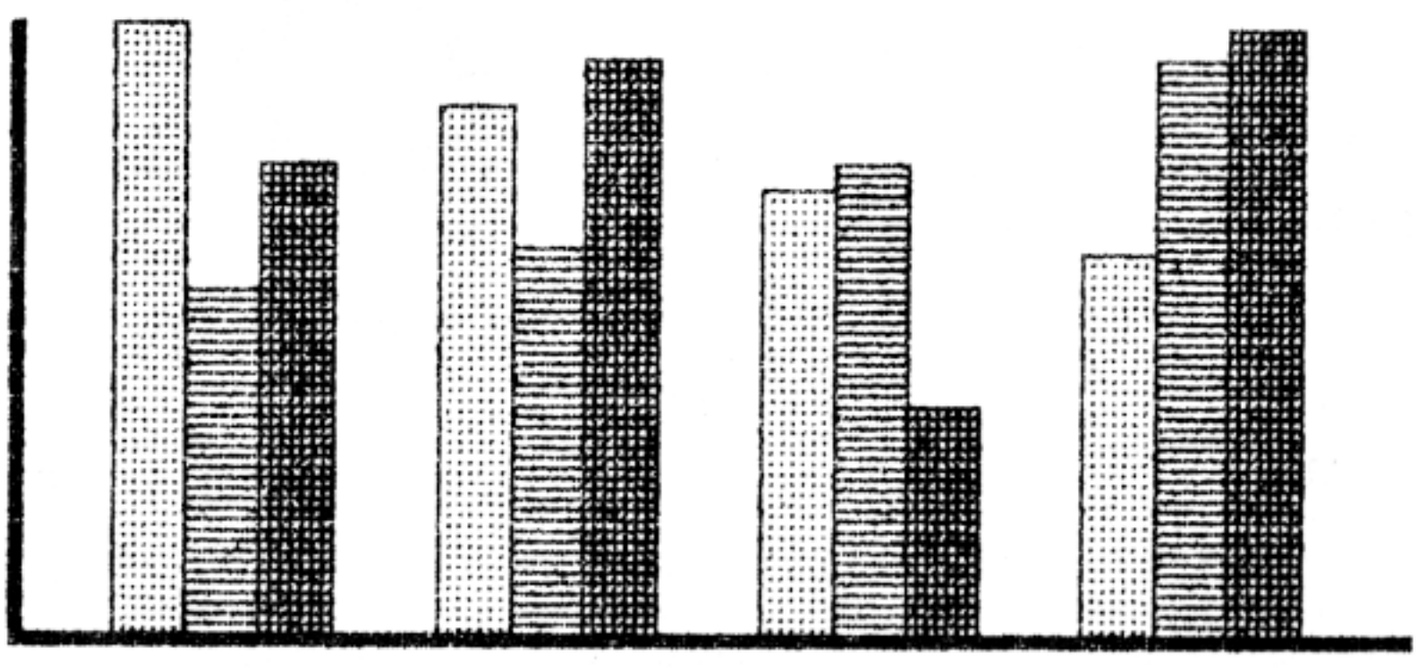
Regular Text

You can use the Repeats Across and Repeats Down printing options to add border elements to a sign. First print the border; then re-load the paper and print the rest of the sign.

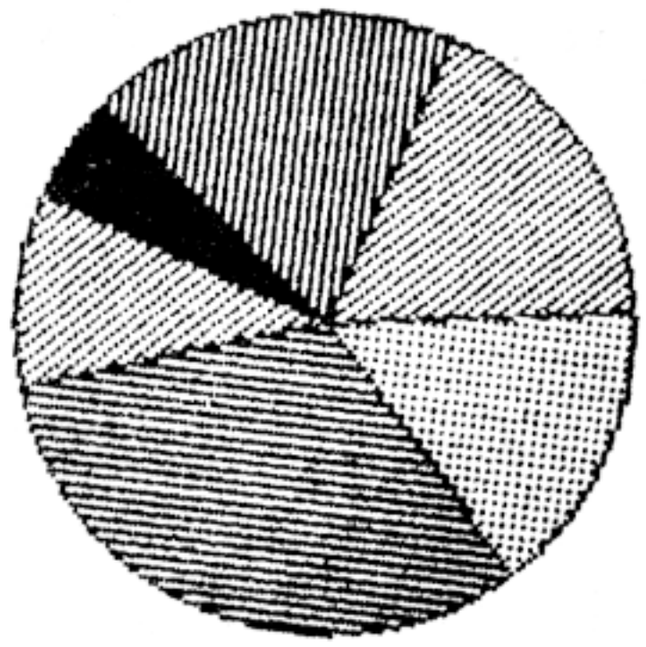
Charts and Graphs

You can use SCS-Draw to create many types of charts and graphs. The camera sales chart included in SAMPLE.DRW is an example of a pictorial chart, which presents numerical information as rows of a repeating basic element. Use the Block Move command to create this type of chart.

SCS-Draw can also be used to create bar charts. Use the Measure command to make the bars the right size, and then fill the bars with patterns to differentiate each type of information.



To generate pie charts, use the LF command to set a fixed endpoint at the center of the circle, and then use L2 to draw the lines to the edge of the circle.



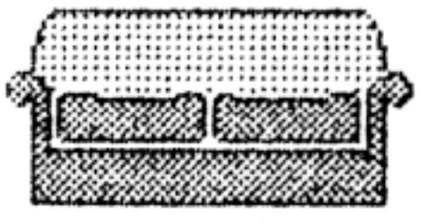
Letterheads and Logos

Letterheads, logos, and business cards can be drawn with SCS-Draw and then printed in camera-ready form to be used for offset printing. Although the finished image may look like it was generated by a computer, this could be especially appropriate if your line of work is computer-related.

Also, if you have an impact printer (dot-matrix or daisywheel) with friction feed, you can use SCS-Draw to print your logo on almost anything, such as receipts, contracts, and forms.

The ideas shown below are just suggestions; you are the only person who can decide what your letterhead or business card should look like.

Photographer



Furniture Store

Programmer

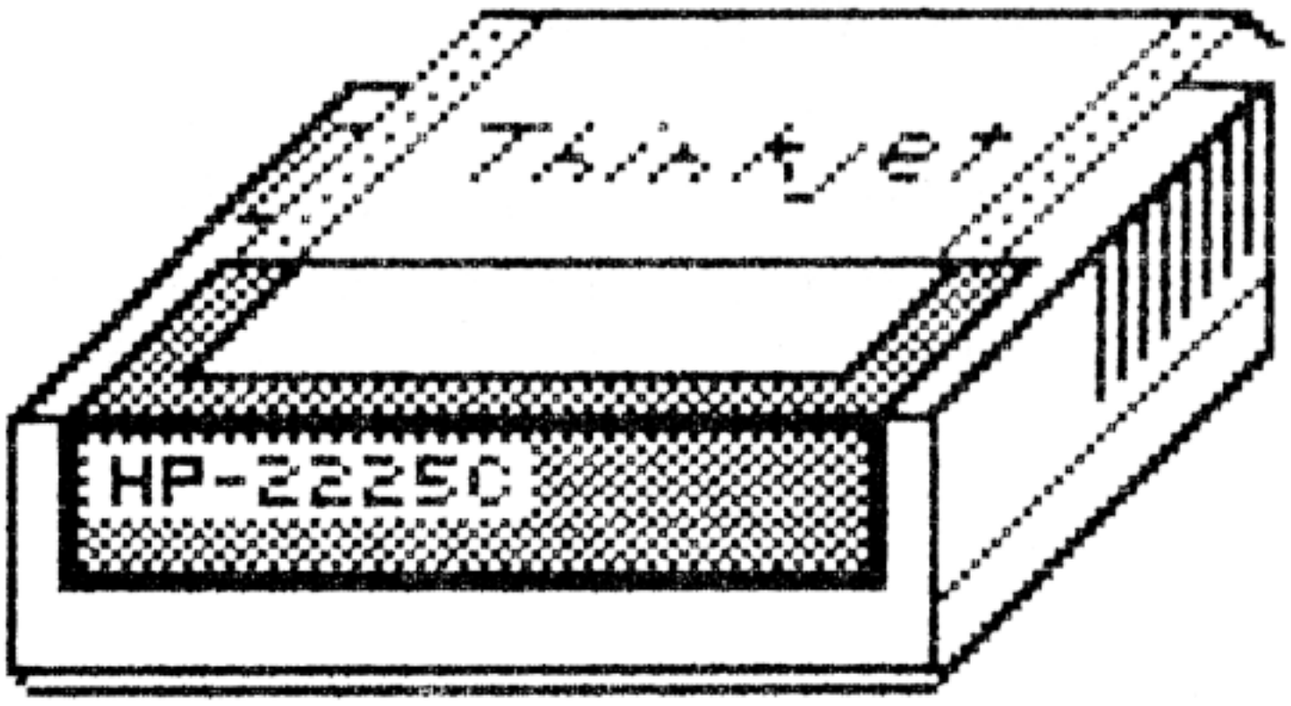
Freelance Writer

If you print an image that will be reproduced on an offset press, the following suggestions may be helpful:

1) Use the Bold Printing print option to make the image as dark as possible.

2) Use a new ribbon or ink cartridge in your printer. If you still get greyish-blue printing (instead of black), try a different brand of ribbon or a different type of paper.

3) If you follow these two suggestions and still don't get enough contrast on your printer, go to a photocopying service and get a high-quality copy of the printed image. This copy will usually have better contrast than the original, although some clarity may be lost. Also, a photo service or a professional printer may be able to make a stat (photostatic copy) of your image, which can be used as camera-ready art.



Appendix A

Computers and Printers Supported

Kaypro Computers Supported

SCS-Draw is designed to run on any of the Kaypro CP/M computers that have graphics capability. This includes the following models:

* Kaypro 2'84
* Kaypro 4'84
* Kaypro 10
* Kaypro New 2
* Kaypro 2X

Printers Supported

SCS-Draw can be used with most popular dot-matrix and letter-quality printers. The following list shows the printers supported by version 1.0 of SCS-Draw:

1) Epson MX-80 and MX-100 (with Graftrax or Graftrax Plus), Epson FX-80, FX-100, RX-80. Also many other Epson-compatible printers, or printers with an Epson emulation mode.

2) Okidata ML84 Step 2, ML92, and ML93. Note that Okidata is now selling the ML92 and ML93 in an "IBM-compatible" configuration, so newer Okidata

printers should use selection #7 below.

3) Hewlett-Packard 2225 Thinkjet. Switch 5 on the rear panel must be UP, for Alternate Mode. (HP claims that "Alternate Mode" is Epson-compatible, but this isn't completely true -- you must use this selection instead of the Epson selection.)

4) C. Itoh 8510 Prowriter.

5) Star Gemini 10X and 15X, including "PC" models.

6) Texas Instruments TI-855 and TI-865.

7) IBM Graphics Printer and other IBM-compatible printers. (See Okidata note above.)

8) Anadex DP-9620A and compatibles.

9) Daisywheel printers, including the Kaypro/Juki 6100 and 6300, Diablo 630, 1610, and 1620, C. Itoh Starwriter, Brother HR-15, and other Diablo compatibles.

Because the list of supported printers is still growing, your copy of SCS-Draw may support more printers in addition to those shown above. See the Printer selection in the Print Image menu for the exact list of printers supported by your copy of SCS-Draw.

NOTE: A program called SETDRAW is provided with SCS-Draw. This program allows you to change the default printer selection in SCS-Draw, so that you don't have to select your printer each time you use SCS-Draw. For information on how to use SETDRAW, refer to Chapter 2.

Appendix B

Technical Information

If you're a programmer, or have a technical interest in your Kaypro computer and its software, you may find some of the information presented in this appendix helpful, useful, or interesting. None of this information is necessary to use SCS-Draw.

Z80 Assembly Language. SCS-Draw is written in Z80 assembly language. This was necessary for a variety of reasons, but the two most important are: 1) to provide a fast way to set up and handle bit-mapped graphics, which the Kaypro does not support; and 2) to minimize the program size, so that all of the drawing commands and the sketchpad can be entirely RAM-resident.

Initialization. When SCS-Draw is first loaded, some initialization code is executed. This code is loaded in data areas, which are cleared before the sketchpad appears. As a result of this, SCS-Draw cannot be re-executed with a 0-length command (i.e., GO.COM). To prevent any possible problems with this, SCS-Draw modifies itself upon program exit so that it will do a Warm Boot if you try to re-execute it from RAM.

Printer Drivers. The most interesting part of the program, from a software design standpoint, is the printer driver. There is only one printer driver, and

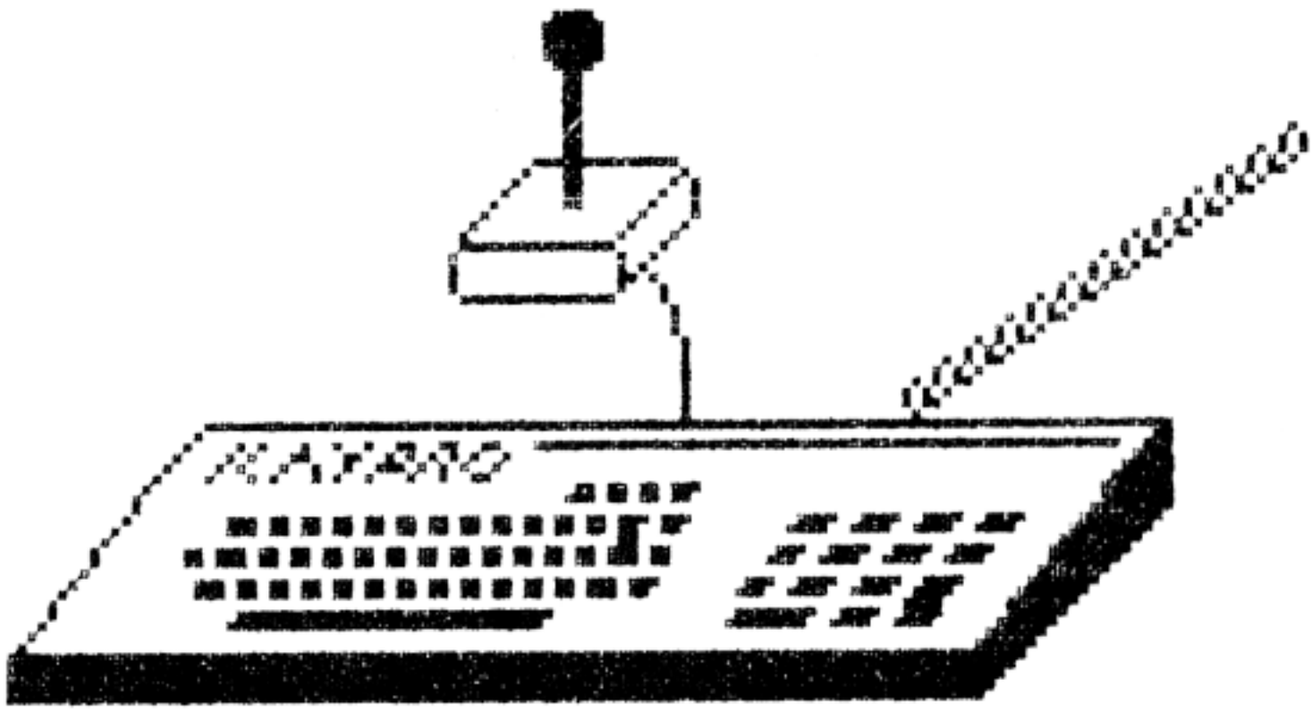
it uses self-modifying code to allow for the different printers that are supported. To simplify this task, a "standard" printhead height of six pins is used. In other words, six pins are fired on each pass of the printhead, even if the particular printer being used is capable of more. This slows the printing down slightly on printers that can fire eight or nine pins at a time, but it makes it possible to switch printers instantly, without re-installing the program.

The Sketchpad. The sketchpad itself is stored as one continuous bitmap, 362 pixels wide and 336 pixels tall. The display window is 122 pixels wide and 84 pixels tall, and it moves in 48-pixel increments horizontally and 42-pixel increments vertically.

Pop-up Menus. The routine that refreshes the currently displayed window is highly optimized, and this provides the pop-up menu capability. Pop-up menus are displayed by a general window handler that draws the blank window from the bottom up and then fills it from the top down; when the menu is no longer needed, the display window is simply refreshed.

Image Libraries. SCS-Draw image libraries are created as standard CP/M random access (direct access) files. Images are stored in pages of 20, which correspond to the pages that are displayed in the Save/Select menu. The page headers are in a double-linked list structure, so that the Save/Select menu can quickly move one page in either direction. SCS-Draw will not create an empty image library -- whenever an image library is closed, SCS-Draw checks to see whether it is empty; if so, it is deleted.

RAM Requirement. SCS-Draw requires about 54K of TPA. A warning message is printed if this is not available because of RAM-resident utilities.



Appendix C

Installing a Joystick

Kaypro computers are not know for expandibility. They have no slots for plugging in extra memory or extra ports, and there is no standard method for hooking up a joystick. It is possible, however, to install a joystick that can be used with SCS-Draw. The task requires some soldering (inside the keyboard), but is fairly simple for a person with previous electronics experience.

The joystick installation explained here will allow you to use a four-direction joystick for any function that was previously accomplished with the arrow keys. The joystick can be used with any software that runs on your Kaypro and uses the arrow keys, such as SCS-Draw, WordStar, or other programs. (The arrow keys will still work exactly as before.)

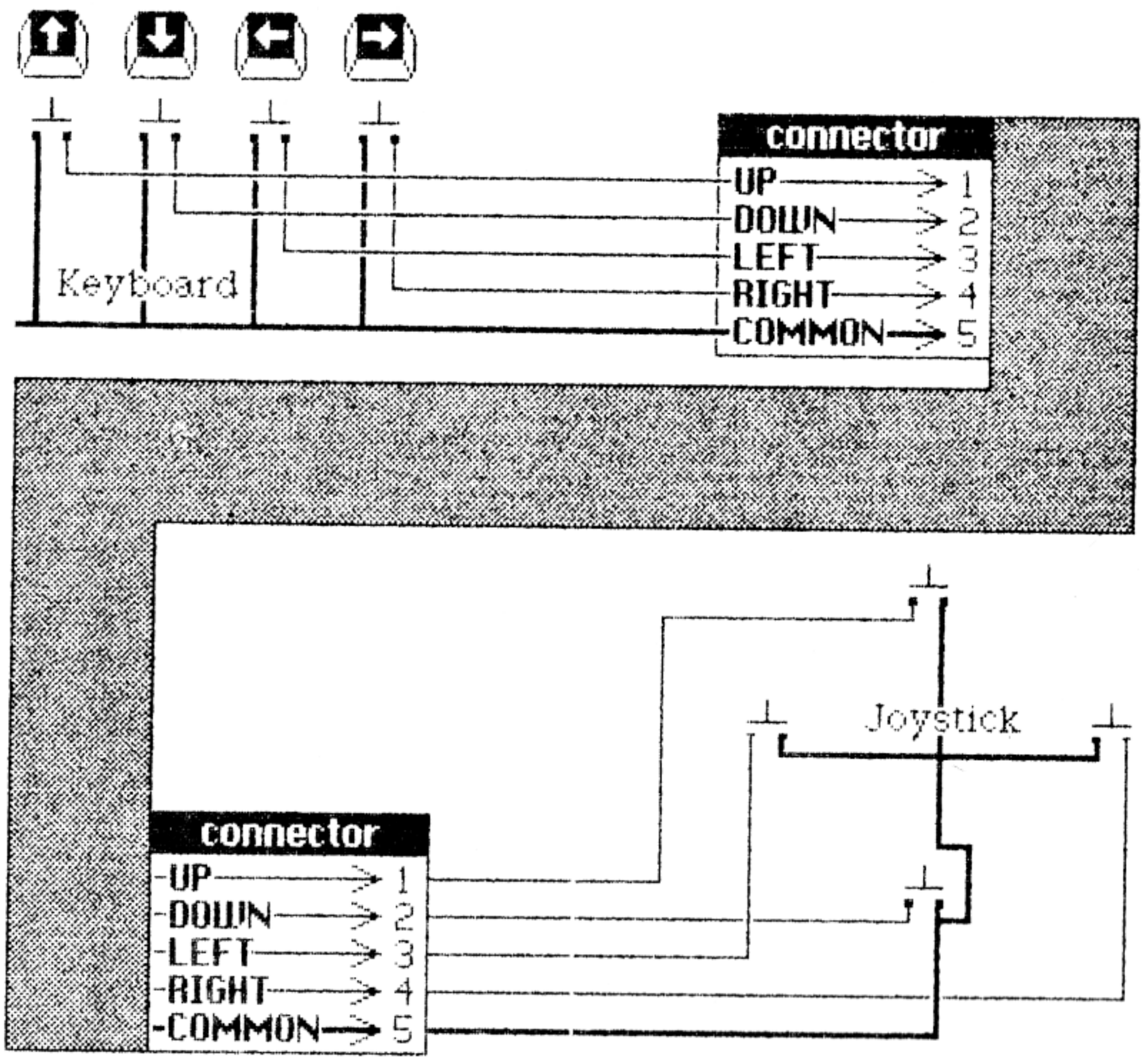
Explanation

The keys on the Kaypro keyboard are simple switches. Each row of keys has a common ground, so the four arrow keys (which are all on the top row) are simply four push-button switches that share a common ground.

A simple four-direction joystick is also made up of four push-button switches that share a common

ground. The switches are activated by pushing the joystick handle in various directions -- pushing the joystick up closes the top switch, etc.

So, installing a joystick is accomplished by connecting the joystick's ground wire to the common ground shared by the Kaypro arrow keys, and then connecting each of the leads from the four joystick switches to the corresponding lead from each of the arrow keys. This is shown in the schematic below.



Joystick Installation -- Schematic Diagram

Installation

To install the joystick, you'll need the following two items:

1) A simple four-direction joystick. (Make sure that it is a model that uses four switches, and not two potentiometers.)

2) A jack that can be mounted along the back of the keyboard. (Either get a jack that matches the joystick cord connector, or get a matching pair of connectors for the joystick cord and the back of the keyboard.)

The only tools required are a soldering iron, a pair of wire cutters, and a phillips head screwdriver. Depending on the type of connecter you use, additional tools may be needed to install the connector.

To install the joystick, disconnect the keyboard from the computer and follow these steps:

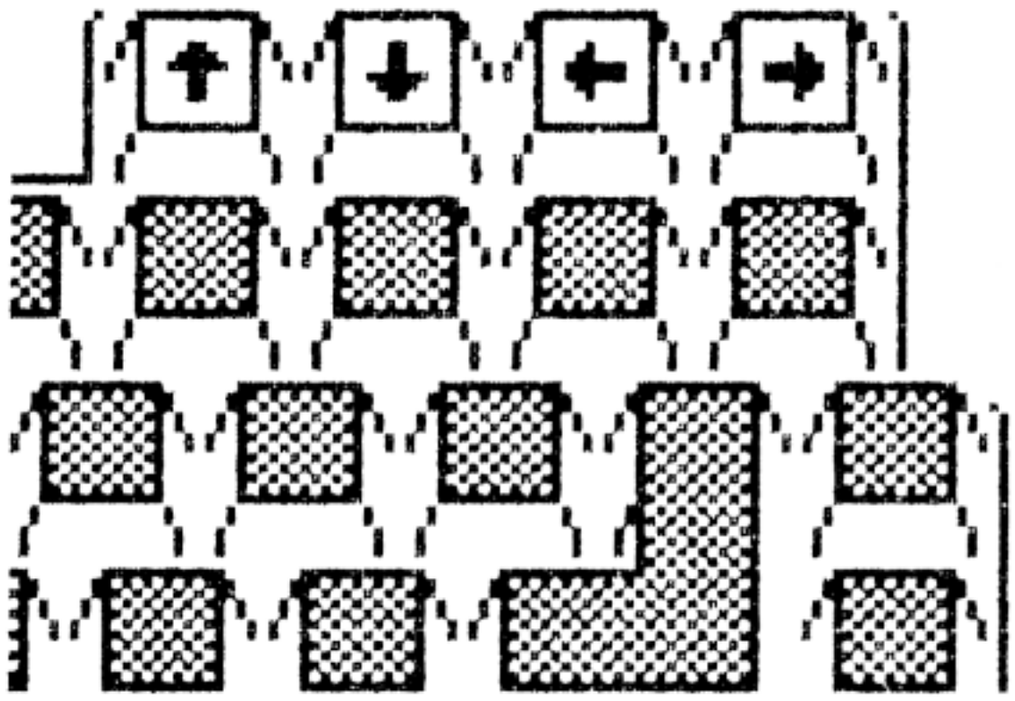
Step 1 — Take the keyboard apart.
Remove the six small screws around the sides and back of the keyboard, and pull the aluminum top off. Then remove the two mounting screws on each side of the keyboard assembly and pull off the connector that comes from the keyboard cord jack. Pull out the keyboard assembly and set it aside.

Step 2 -- Install the jack.
Install the jack for the joystick cord in the back edge of the keyboard housing. Check to make sure that the jack will not interfere with the keyboard when it is re-mounted inside the case.

Step 3 — Determine the wiring of the joystick.
Use an ohm meter to determine which of the pins in the joystick connector are coming from the common ground and each of the four switches. (This will depend on the particular model of joystick that you're using.) If you don't have an ohm meter, it may be possible to determine the pin assignments by looking inside the joystick itself.

Step 4 — Connect the keyboard to the jack.
Locate the common ground for the arrow keys (on the back of the keyboard assembly circuit board), and run a wire from it to the pin on the connector that corresponds to the common ground of the joystick. Then connect each of the four pins from the joystick switches to the corresponding points on the circuit board for each of the arrow keys. (The connection points on the back of the circuit board are above each key and slightly to the right.)

Step 5 -- Re-assemble the keyboard.
Put the keyboard back together and test the joystick. Note that the joystick will work exactly like the arrow keys; if your arrow keys are not installed correctly, refer to Appendix D for instructions on redefining them.



Appendix D

Redefining the Arrow Keys

SCS-Draw requires the same settings for the arrow keys as WordStar, but many Kaypros are installed for Perfect Writer, which has different definitions for the arrow keys. If you find that the arrow keys on your Kaypro computer don't work correctly with SCS-Draw, you will have to redefine the arrow keys as explained below. After you have made the proper changes, just be sure to do a reset (cold boot) from the modified disk before running SCS-Draw.

Procedure

A program for changing the definitions of the arrow keys was provided with your Kaypro. It is called CONFIG, and it can be found on your CP/M diskette. Refer to your Kaypro User's Guide for information on running your particular copy of CONFIG; there is more than one version in use on Kaypros.

When you get to the section of the program that asks for the new arrow-key definitions, use the following values:

up arrow = CTRL/E (05 hex)
down arrow = CTRL/X (18 hex)
left arrow = CTRL/S (13 hex)
right arrow = CTRL/D (04 hex)

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