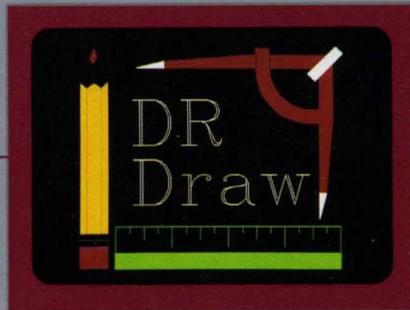




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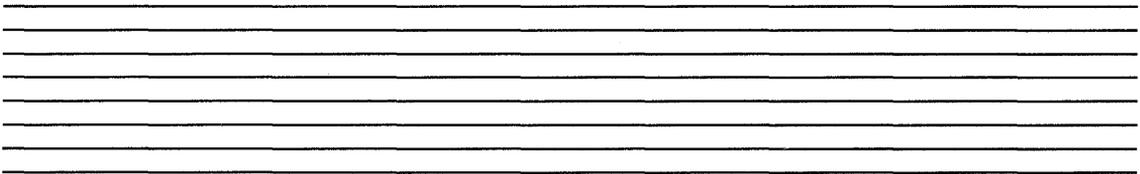


DR Draw™
Graphic Application
User's Guide



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DR Draw™
Graphic Application
User's Guide



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Preliminary versions of software and documentation for DR Draw were acquired through a technology exchange agreement with TeleVideo Systems Incorporated of Sunnyvale, California.

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Foreword

INTRODUCTION

This manual teaches you how to produce a wide range of presentation-quality graphics with DR Draw™, including organizational charts, flow charts, structured analysis diagrams, and line illustrations. You can display pictures created with DR Draw on color and monochrome display monitors, or you can use a printer, plotter, or camera to present your pictures on paper, transparencies, or print or slide film.

STRUCTURE OF THIS MANUAL

The *DR Draw™ Graphic Application User's Guide* contains six sections and two appendixes.

- Section 1 is a brief overview of DR Draw, after which you begin the first of two tutorials.
- Section 2 is a beginning tutorial in which you draw a basic organizational chart and a graphic design that you might use for a report cover.
- Section 3 is an advanced tutorial in which you modify and embellish the designs you created in the beginning tutorial.
- Section 4 describes several concepts that are fundamental to DR Draw.
- Section 5 describes each of DR Draw's functions in alphabetical order.
- Section 6 describes DR Draw's seven design elements, also in alphabetical order.
- Appendix A describes the font library, which lets you enter text in several different type styles, including Roman, italic, script, Greek, and gothic fonts.
- Appendix B describes error messages that you might see while starting or using DR Draw.

CONVENTIONS

This manual uses several conventions involving capitalization and colored type.

In the text, DR Draw's functions, design elements, and layouts are capitalized, although they are not capitalized in the menus you see on your display monitor. For example, the text refers to the COPY function, the POLYGON design element, and the PORTRAIT layout. Functions, including LAYOUT, are described in Section 5; design elements are described in Section 6.

To help you identify filenames and filetypes (like CHART.PIX), they are capitalized in the text and in examples of prompts and messages. However, you need not capitalize filenames when you use DR Draw.

The names of three keystrokes, PICK, DONE, and RETURN, are also capitalized in the text.

DR Draw's menus and submenus appear with initial capitalization. You will see references to the Main Menu, Edit Menu, and Change Submenu, among others.

Examples of DR Draw's prompts and messages appear in Dot Matrix colored type. User input appears in Oblique colored type.

ILLUSTRATIONS

The figures in this user's guide were produced with DR Draw.

RELATED
PUBLICATIONS

Before you start to use DR Draw, be sure you read the *DR Draw User's Guide Supplement* (cited as *Supplement* in this manual) you received with DR Draw. The *Supplement* describes how to copy your DR Draw diskettes, format a picture file diskette, and start DR Draw. It also provides information about the devices you can use with DR Draw.

In addition, you should be familiar with your hardware and software. For information on the particulars of your system, refer to the documentation that came with your computer, display monitor, printer, plotter, camera, and mouse.

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Section 1

OVERVIEW

INTRODUCTION

DR Draw allows you to use your microcomputer to communicate your ideas with high-quality graphics. DR Draw's capabilities give form to your imagination, allowing you to create your own graphic designs. With DR Draw you can create, preview, change, and refine a drawing before you print or plot it.

This section introduces you to DR Draw, explains its features and capabilities, and previews the sections that follow.

YOUR COMPUTER

Your computer and its output devices (display monitor, plotter, and printer) use DR Draw to help you create effective presentations. The computer frees you from the repetitive tasks of aligning, changing, and repeating figures. Your monitor is a window into a two-dimensional drawing surface where you can create drawings that bring your ideas to life.

The pictures you create may be charts, diagrams, or free-form graphics. The pictures are easily reproduced on paper or transparencies for presentation. Your design and the capabilities of DR Draw combine to produce pleasing and imaginative pictures like the one shown in Figure 1-1.

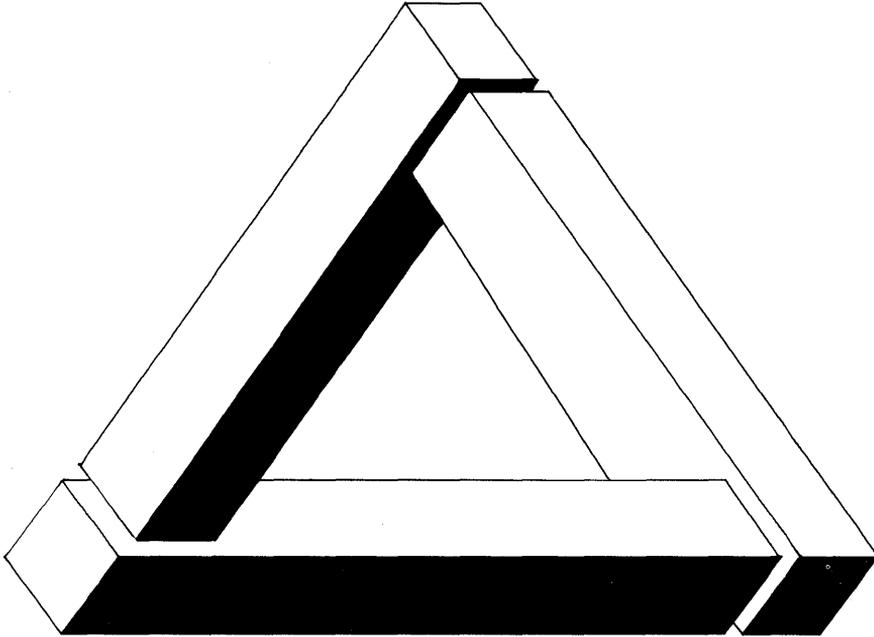


Figure 1-1. Picture Created with DR Draw

CAPABILITIES

With DR Draw you can do the following:

- add a variety of design elements that include
 - circles
 - polygons
 - bars
 - lines
 - arcs
 - text
- combine design elements to create pictures
- change size and dimensions of design elements
- use a palette of colors to enhance pictures
- use a library of typefaces
- create word-slides with text alone

- edit your picture
- save pictures on diskette
- get a presentation-quality copy of your work from a printer, plotter, or camera
- enlarge part of a picture
- expand a design beyond the confines of the display monitor

USING THIS MANUAL

Two tutorials in this manual help you build a foundation for success with DR Draw.

The tutorials acquaint you with the basics of DR Draw and allow you to progress rapidly. Section 2 contains the first tutorial and provides step-by-step practice in basic DR Draw functions. You learn by creating charts and designs on the drawing surface. In this beginning tutorial, you also learn how to save your picture files on diskette.

Section 3 presents the advanced tutorial, which builds upon skills acquired in the beginning tutorial. It introduces to you more powerful features of DR Draw that let you create more complex designs.

Section 4 provides detailed descriptions of concepts the tutorials introduce. Section 5 provides descriptions of all DR Draw functions and Section 6 explains the DR Draw design elements.

Appendix A describes DR Draw's font library. Appendix B lists and explains error messages that can occur when you start or use DR Draw.

Use this manual with the *Supplement*, which tells you how to install and start DR Draw on your computer system.

USING KEYBOARD OR MOUSE

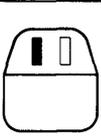
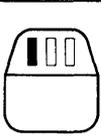
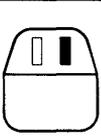
DR Draw can be used with a variety of computers. You can use either a mouse or keyboard to communicate with DR Draw.

You use two special keystrokes or mouse buttons to perform two important DR Draw functions: PICK and DONE. PICK allows you to select a menu item or location on the drawing surface.

DONE completes an operation. In some cases, PICK performs and ends an operation without requiring DONE.

Table 1-1 shows the keys or buttons used for PICK and DONE:

Table 1-1. PICK and DONE (Keyboard/Mice)

	Keyboard	2-Button Mouse	3-Button Mouse
PICK	SPACE BAR		
DONE	RETURN		

DR Draw MENUS

DR Draw is a menu-driven program. You choose functions from a series of menus. The Main Menu provides a list of major DR Draw functions; several lead to submenus that contain more functions.

MENU MAP

The menu map below routes you through the menus offered by DR Draw.

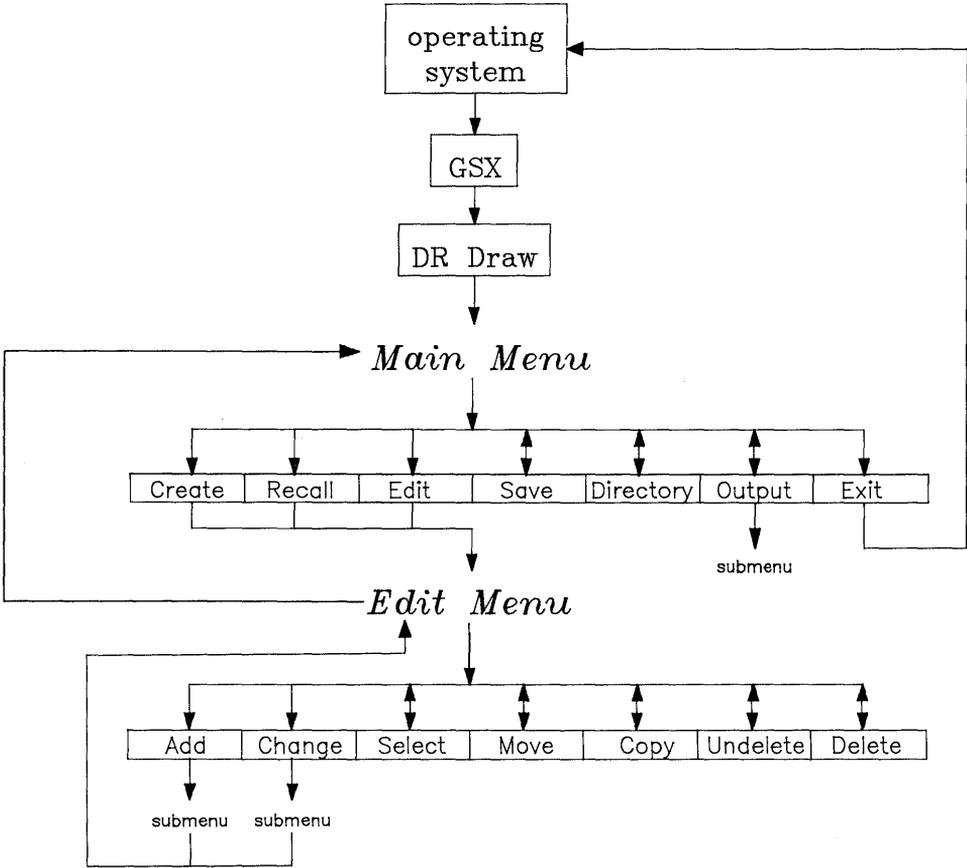


Figure 1-2. Menu Map

End of Section 1



Section 2

GETTING STARTED

INTRODUCTION

With DR Draw you can easily create many kinds of charts, diagrams, and other graphic designs. This section helps you teach yourself to use DR Draw.

By following the steps in this tutorial, you quickly become familiar with DR Draw's capabilities and learn to create your own pictures.

In this tutorial you create two sample drawings: an organizational chart, and a design suitable for a report cover.

START DR Draw

You must set up your computer and start DR Draw before you begin the tutorial.

Your method of starting DR Draw depends on the type of computer system you use. Refer to the *Supplement* for information on starting DR Draw.

You need two diskettes to operate DR Draw: the work diskette that contains DR Draw and a formatted diskette on which to store your picture files. Refer to the *Supplement* for information on formatting diskettes.

CREATE A CHART

An organizational chart communicates the hierarchy of a business. In the first part of this tutorial, you learn how to create the first few boxes in the organizational chart shown in Figure 2-1.

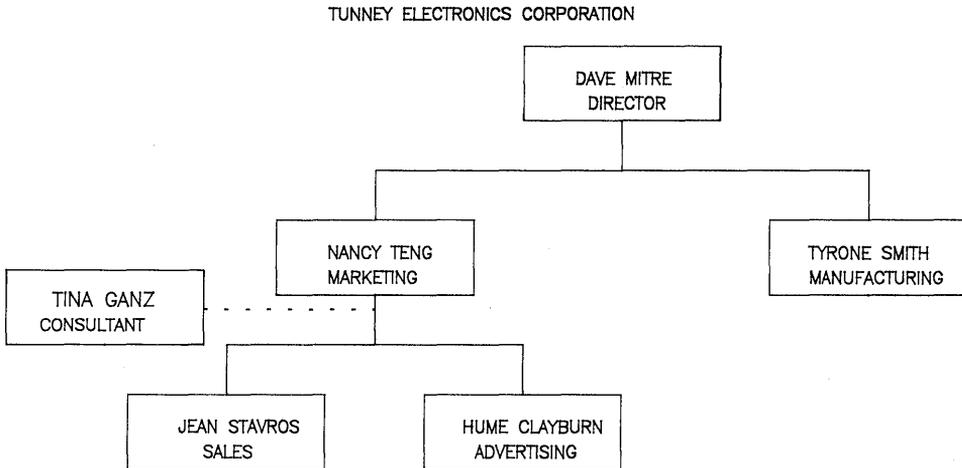


Figure 2-1. Organizational Chart

This tutorial teaches you how to do the following:

- create a picture file
- use the grid
- add design elements, including text
- copy design elements
- move a design element to another location
- save and recall your picture file
- print output from the picture file

MAIN MENU

When you start DR Draw, a copyright message appears on the screen. The message is soon followed by the Main Menu, a bar at the top of the screen that lists the main functions of DR Draw.

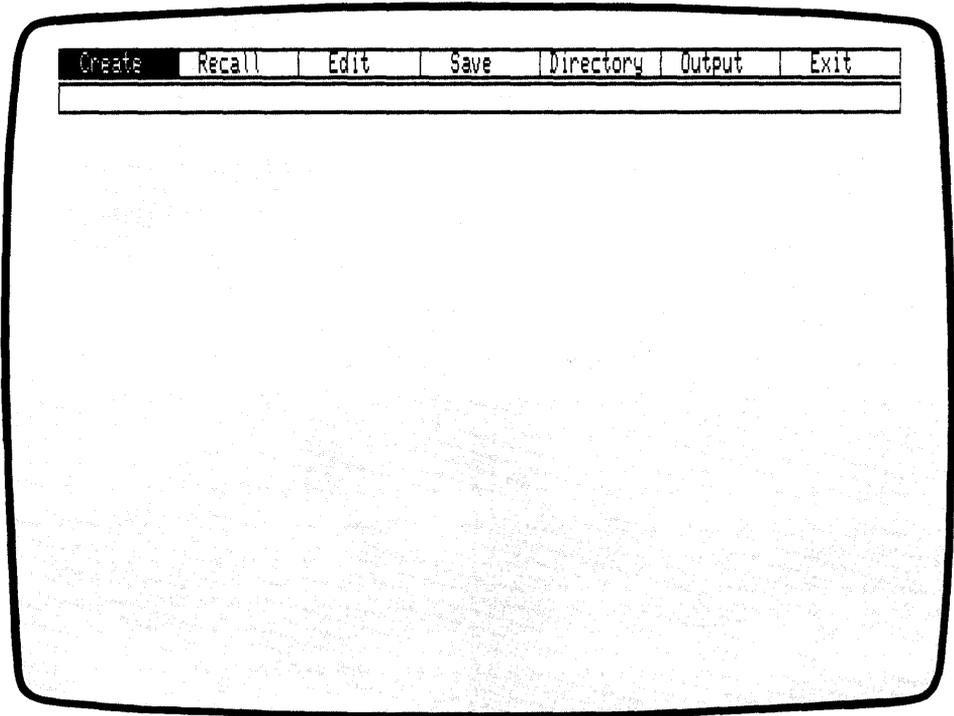


Figure 2-2. Main Menu

MOVING THROUGH THE MENU

If you are using a mouse, you can move through the menu by moving the mouse left or right. For systems without a mouse, use the TAB key to move through the menu, left to right. The BACKSPACE key reverses movement through the menu, right to left. On keyboard systems and some mouse systems, the menu selection appears in reverse video.

Practice moving through the menu bar a few times.

PICK

Now begin a picture by using PICK to select a menu item. If you are using a mouse, press the button on the far left to PICK. On the keyboard, press the SPACE BAR to PICK. To avoid confusion, the action is referred to simply as PICK throughout this guide.

**CREATE A
PICTURE FILE**

From the Main Menu, PICK the CREATE function to create a picture file.

When you PICK the CREATE function, DR Draw prompts you to name the picture file:

`P i c t u r e f i l e n a m e ?`

When you type a filename, you must tell DR Draw which drive contains your picture diskette. DR Draw stores the picture file on that diskette. For example, if your picture diskette is in drive B, you type the drive identifier

B:

before the filename.

In response to the picture filename prompt, type the correct drive identifier and the filename:

B:CHART

If you misspell the filename, use the BACKSPACE key to erase the mistake, and retype the name. Press the RETURN key.

For the filename you can use any combination of letters or numbers that does not exceed eight characters. DR Draw ignores characters after the eighth character. Also, do not use punctuation marks or spaces.

The Main Menu disappears and a rectangle appears, rapidly filling with a grid of points. The rectangle is the window frame. It encloses the drawing surface where you work. A new menu bar replaces the Main Menu. This is called the Edit Menu, and it lists the functions you can use to make your organizational chart. The grid of points acts like electronic graph paper to help you align different design elements.

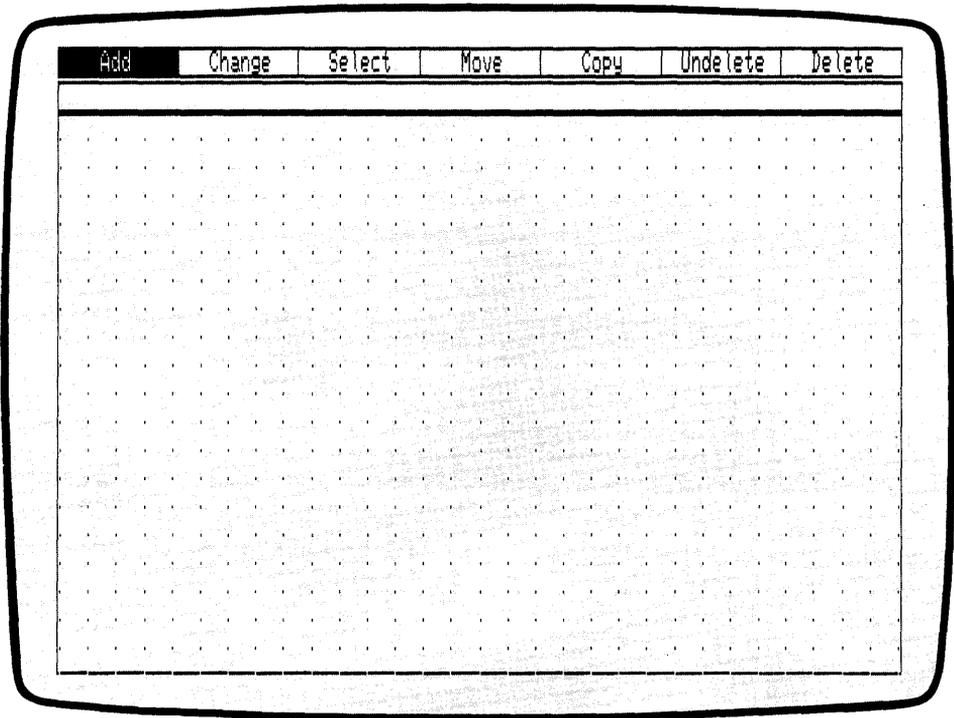


Figure 2-3. Edit Menu, Grid, and Window Frame

DRAW ELEMENTS

To draw the organizational chart, you add different design elements to the grid one by one, much in the way a graphic artist builds a design with overlays. A design element is any shape, symbol, or unit of text that you use in the picture. You begin by using lines to draw boxes.

RETURN AND DONE

If you PICK the wrong menu item here or anywhere in the tutorial, press the DONE key to return to the previous menu, and PICK again. On keyboard systems, you press the RETURN key for DONE. On a mouse, the second button from the left signals DONE.

If you press the DONE key when you are in the Edit Menu, your picture disappears from the screen, and the Main Menu appears. To return to the Edit Menu and continue working on your picture, PICK the EDIT function from the Main Menu.

DRAW LINES

PICK the ADD function from the Edit Menu. A new menu of shapes and figures appears below the Edit Menu. These are the design elements you use to create your picture. Refer to Section 6 for descriptions of DR Draw's design elements.

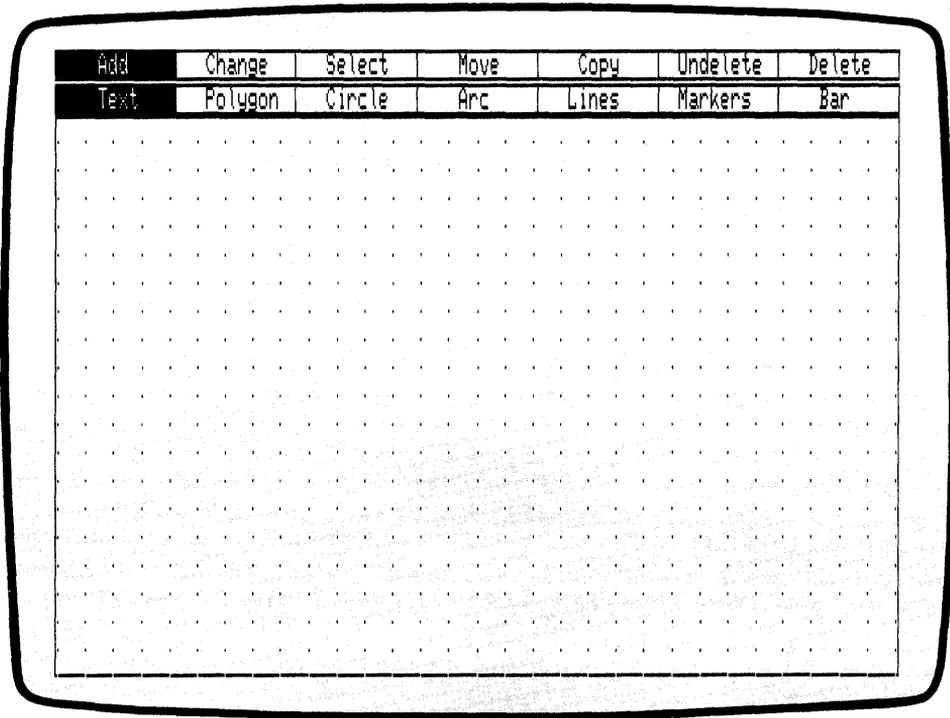


Figure 2-4. Edit Menu and Add Submenu

PICK the LINES design element from the Add Submenu. A cross hair (+), called the graphics cursor, appears at the center of the drawing surface. The center of the cursor marks your position on the drawing surface. The graphics cursor appears when you PICK a menu item that adds a design element or changes a picture element. The cursor also appears when you need to PICK a point for repositioning elements or changing your view of the drawing surface. For details on the graphics cursor, refer to Section 4.

On the second menu line, DR Draw tells you

PICK points, press DONE when finished

You begin creating the organizational chart by drawing lines. You PICK starting and ending points. DR Draw joins the two points to form a line. You can add additional line segments by adding successive points to the element.

If you are using a mouse, move it, and the graphics cursor moves correspondingly. On a keyboard system, use the arrow keys to move the cursor. If you are using arrow keys, note that each press of an arrow key moves the cursor part of the distance between grid points. For example, you might press the cursor key five times to move 4 grid points across the drawing surface.

To begin drawing the chart, locate your cursor at the center grid point on the drawing surface. Move the cursor straight up 3 grid points and PICK. This is your starting point. No line appears, but you might have noticed that the cursor attaches to the nearest grid point if you were not directly over a grid point. This is the SNAP feature, which helps you align design elements by “snapping” the cursor to the nearest grid point on the drawing surface. The SNAP feature is useful for aligning design elements in a picture.

Move the cursor left 4 grid points. On most systems, a line follows the cursor. This is DR Draw's rubberband line, which allows you to see how the line looks before you PICK an endpoint.

PICK the point. The dashed line becomes a solid line between the two points you PICKed—the beginning of a box. See Figure 2-5, “First Line Segment.”

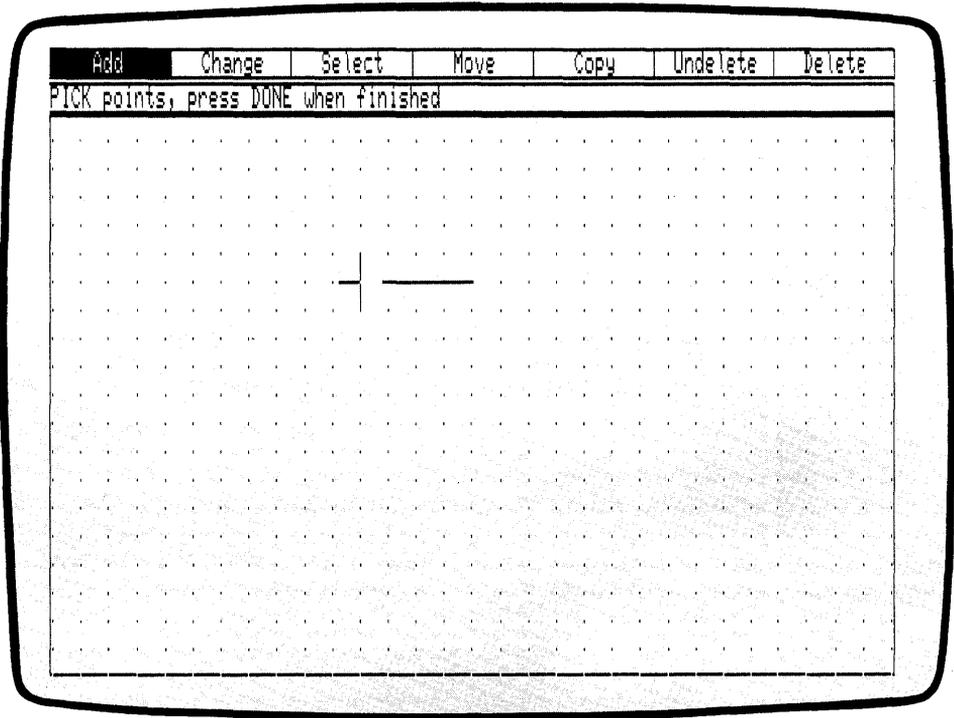


Figure 2-5. First Line Segment

Now move the cursor up 3 grid points on the grid and PICK again. Another solid line appears.

You can move the cursor over the drawing surface freely. Line segments join only the points that you PICK.

Move the cursor 8 grid points to the right and PICK once more. Another line appears. Your box is more than half complete.

Move the cursor 3 grid points down and PICK. One more line segment completes the box. Move the cursor 4 grid points to the left to the point where you began and PICK. The final line closes the box. Now press the DONE key to tell DR Draw that the element is complete. You have created your first design element with DR Draw.

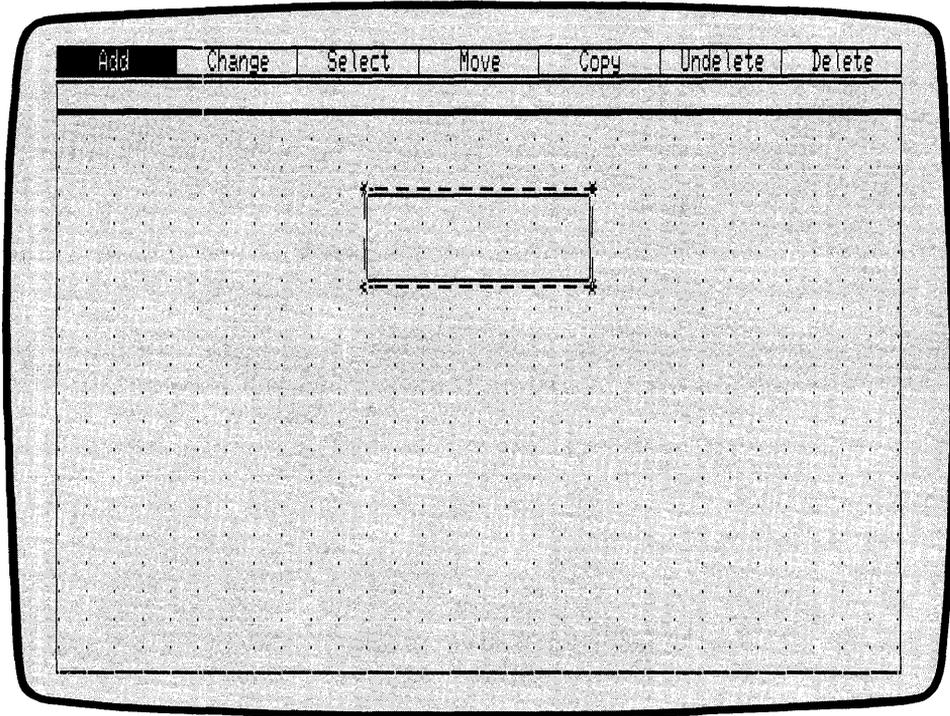


Figure 2-6. First Box

The Add Submenu and the graphics cursor disappear. A broken line, enclosing the box you just drew, appears on the drawing surface.

The broken line is the extent. It marks the current element. The current element is the only design element you can change. Ordinarily the current element is the most recent design element you worked on. However, when you save a picture file on diskette and recall the file, the first element you added to the picture becomes the current element.

The advanced tutorial in Section 3 explains how to use the SELECT function to name a new current element.

DELETE AND UNDELETE

If you made a mistake and want to redraw the box, you can delete the design element with DR Draw's DELETE function. DELETE removes the current element from the drawing surface.

If you accidentally delete an element, the UNDELETE function redraws the last element you deleted, regardless of the number of operations you performed since the deletion.

Practice DELETE and UNDELETE. PICK the DELETE function from the Edit Menu. DR Draw erases the box.

Notice that the grid points below the deleted box also disappear. You can restore the grid points by using the REDRAW function. PICK the CHANGE function from the Edit Menu. From the Change Submenu, PICK the REDRAW function. DR Draw erases the grid, then redraws the grid to restore the missing grid points.

PICK the UNDELETE function. DR Draw redraws the box you deleted on the drawing surface. The extent reappears, defining the box as the current element.

COPY ELEMENTS

To proceed with the organizational chart, you want to draw several more rectangles. You do not have to redraw each box with the LINES design element. Instead, use another DR Draw function, COPY.

PICK the COPY function from the Edit Menu. The graphics cursor reappears. DR Draw prompts

PICK reference point

Move the cursor to the upper left corner of the current element. By positioning the cursor on or near the extent corner, you can more easily locate new elements. PICK the point.

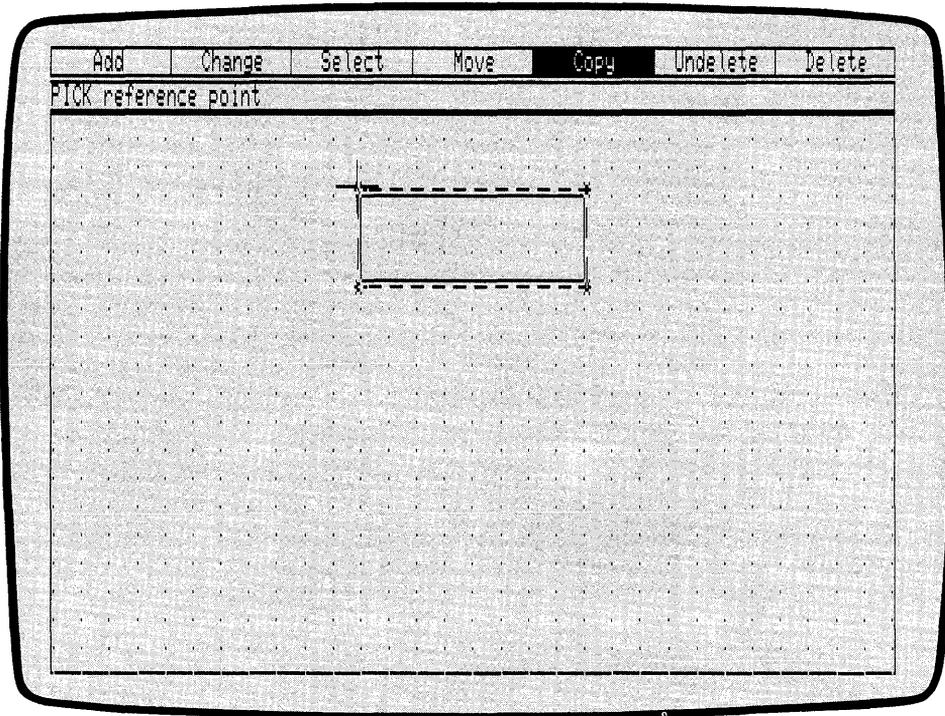


Figure 2-7. Cursor Position (COPY)

A new prompt appears.

PICK location(s), press DONE to finish

Move the cursor 7 grid points down, then 10 grid points left. PICK again. A duplicate of your first box appears below and to the left of the original. The extent now surrounds the new box, which is the current element. The prompt remains on the screen.

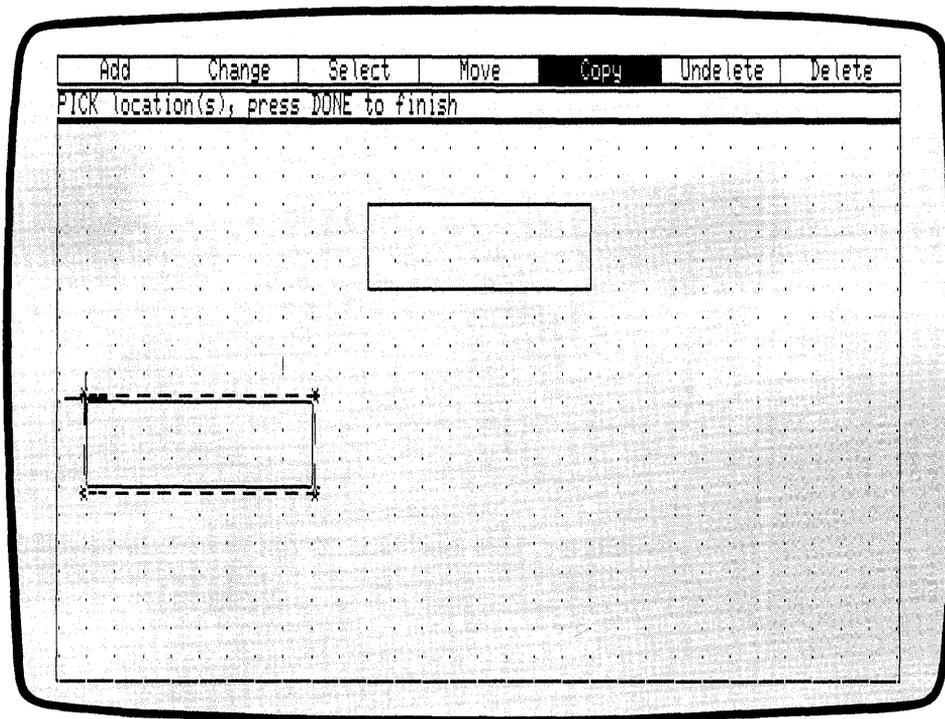


Figure 2-8. Second Box

COPY allows you to make as many copies as you wish in the same operation, as long as the total number of elements in the picture does not exceed 200.

Now add another box to the chart. Using the upper left corner of the new box as the starting point, move the cursor 21 grid points to the right and PICK once more. Another copy of the box appears, surrounded by the extent.

Press the DONE key to finish copying. DR Draw returns you to the Edit Menu.

The last box you added to the picture is slightly off center. DR Draw's MOVE function makes it easy to realign your chart.

MOVE ELEMENTS

The MOVE function allows you to move the current element anywhere on the drawing surface.

PICK the MOVE function from the Edit Menu. DR Draw prompts

PICK reference point

Move the cursor to the upper left corner of the extent. PICK the point. A prompt appears.

PICK new location, press DONE to finish

Move the cursor 1 grid point to the left and PICK. The box shifts to the new position. You are still in the MOVE function, so you could move the box again if necessary. Press the DONE key to return to the Edit Menu.

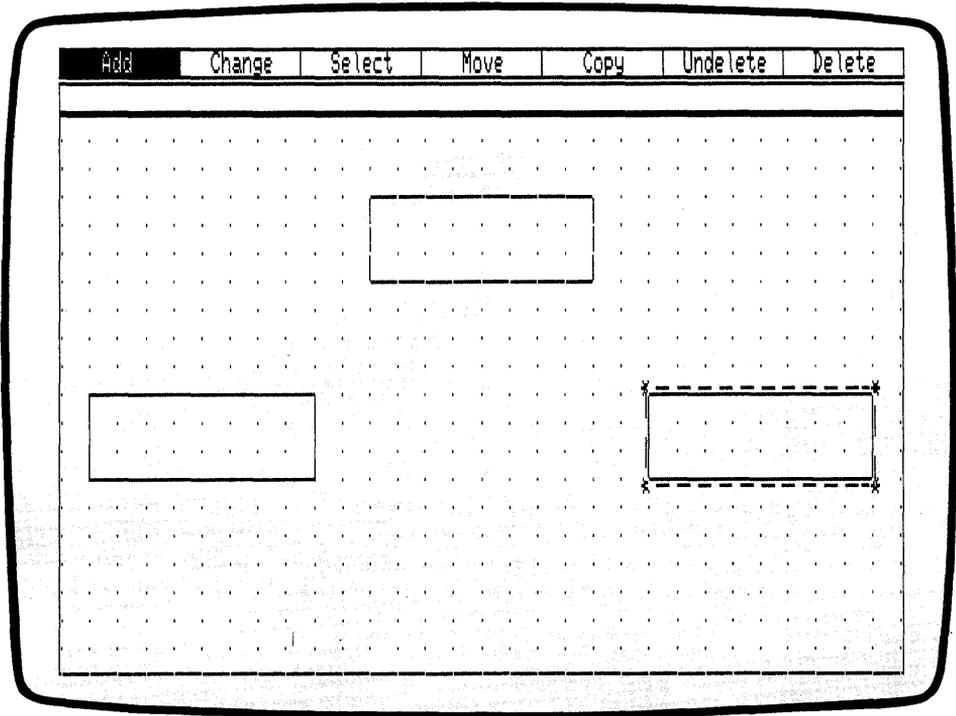


Figure 2-9. Third Box

CHANGE GRID SIZE

Before you add text to the boxes you should substitute a denser grid for the present grid. Adding more grid points to the drawing surface lets you more easily position text within the boxes. The GRID function allows you to change grid density.

From the Edit Menu, PICK the CHANGE function. The Change Submenu appears under the Edit Menu. PICK the GRID function. The Grid Submenu replaces the Change Submenu. PICK the SIZE 0.5X function. The grid disappears, line by line, and a new, denser grid appears on the drawing surface. The new grid is twice as dense as the original grid. The Grid Submenu disappears.

ADD TEXT

The trio of boxes is a start, but you need to add labels to them. Like shapes, you add text with the ADD function.

PICK the ADD function from the Edit Menu. When the Add Submenu appears, PICK the TEXT design element. DR Draw prompts

PICK start, type, RETURN; DONE finishes

If you are using the arrow keys to move the cursor, you can more easily locate grid points by slowing the cursor. A designated key on your keyboard changes the cursor's speed. Refer to the *Supplement* to identify the key.

You change the cursor speed by pressing the key to increase or decrease speed. When you identify the cursor speed key, practice moving the cursor around the drawing surface and alternating between fast and slow speed.

When you feel comfortable with changing cursor speed, you can add text to the first box you created by completing the following instructions.

Within the top box, move the cursor 3 grid points up from the box's lower left corner, then move the cursor 4 grid points to the right. PICK the point. The graphics cursor disappears. An underscore, the text cursor, replaces the graphics cursor.

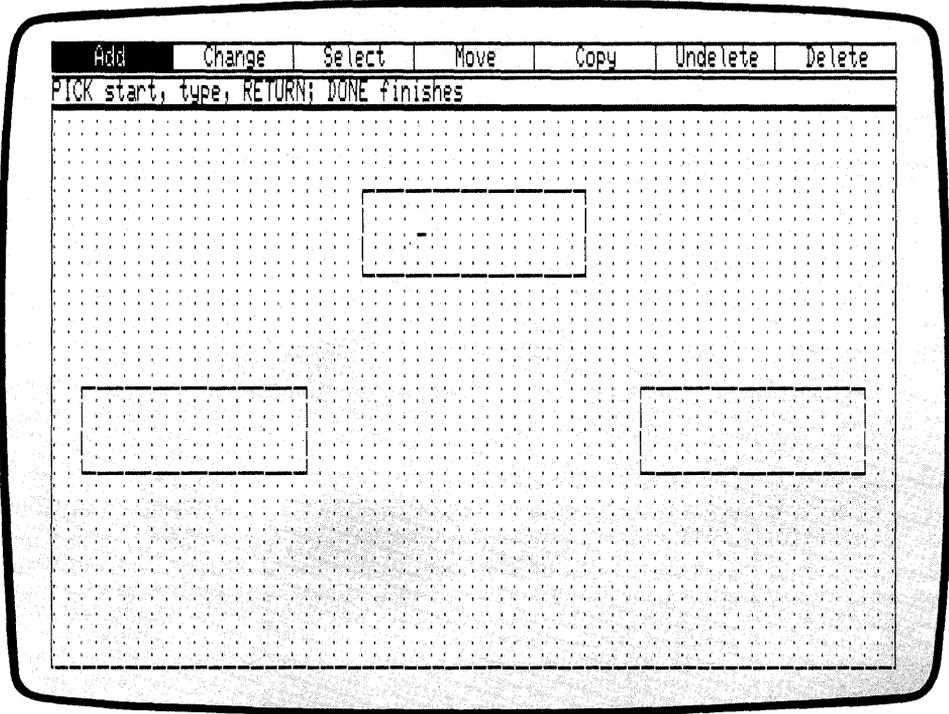


Figure 2-10. Text Cursor

Type the following:

DAVE MITRE

If you make a typing error, use the BACKSPACE key and retype the box label.

After you type the text string, press the RETURN key. The graphics cursor appears below the letter D.

Press the DONE key to finish entering text. The extent appears around the text you just typed.

For detailed information on entering text, refer to Section 6.

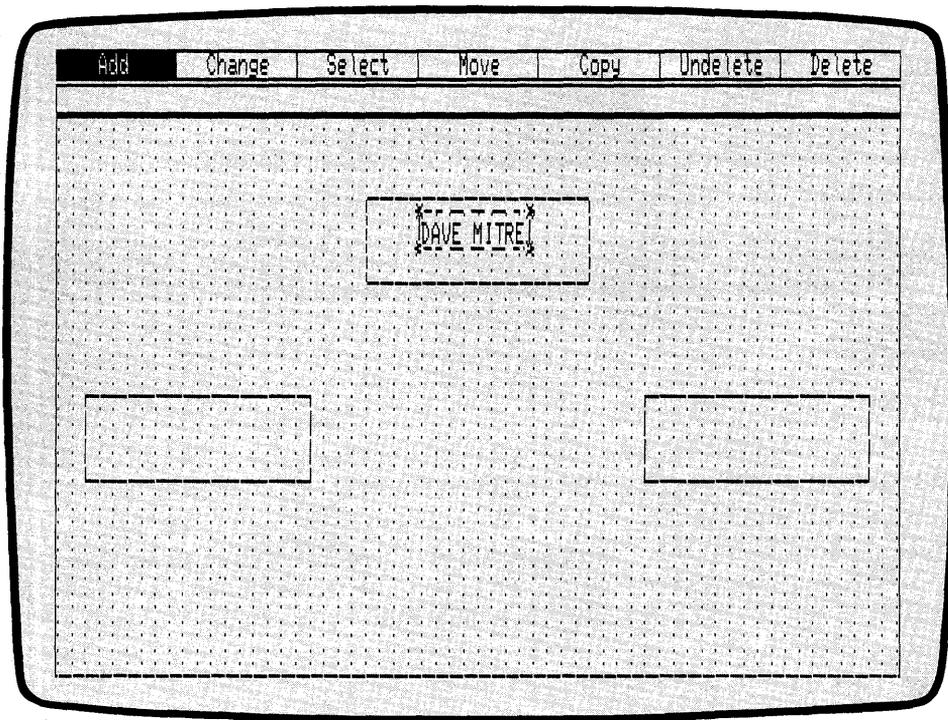


Figure 2-11. Box Label

**CHANGE TEXT
STYLE**

The style of text DR Draw used for your text entry is known as machine font. This is the initial style that DR Draw uses for all text until you specify otherwise. The size and shape of machine font characters may vary between different computers and output devices, so you want to change the font style to one of the typefaces included with DR Draw. These fonts remain the same on screen, plotter, and printer outputs.

PICK the CHANGE function from the Edit Menu. When the Change Submenu appears, PICK the STYLE function. A submenu of font options appears. PICK the Simplex submenu selection. The font Simplex Roman replaces the initial style in the box label.

ADD MORE TEXT

Now add a title to the name you entered in the first box. PICK the ADD function from the Edit Menu. From the Add Submenu, PICK the TEXT design element. DR Draw prompts

PICK start, type, RETURN; DONE finishes

Use the lower left corner of the first box as a starting point. Move the cursor up 1 grid point and 5 grid points to the right of the box's lower left corner.

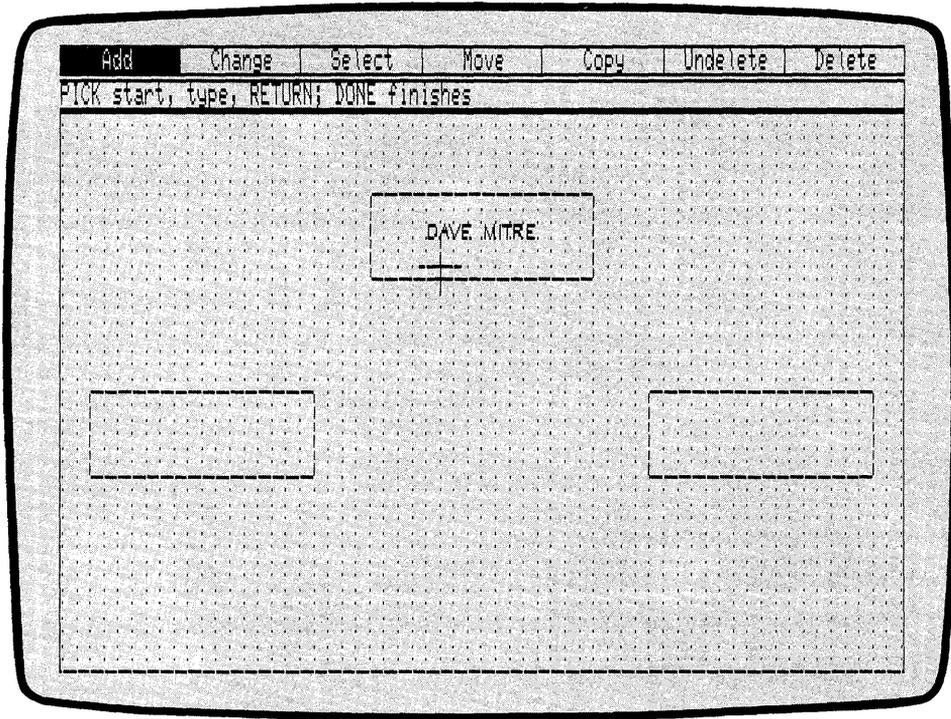


Figure 2-12. Cursor Position (TEXT)

PICK this point. The text cursor replaces the graphics cursor. Type the following:

DIRECTOR

The words appear in the machine font as you type. A bouncing extent surrounds the text to show you the size of the element as it will appear in the current font style, Simplex Roman. Press the RETURN key. The font style changes to Simplex Roman, and the cursor moves to the next line.

When you press the RETURN key after typing a string of text, you can use the mouse or arrow keys to move anywhere on the drawing surface, PICK a point, and type another text string. This feature enables you to add the remaining box labels in one operation.

Using the labels in Figure 2-13, add text to the remaining boxes. Type the names on the third row of grid points above the boxes' lower edges. Type the titles on the first grid row above the lower edges. Do not worry if the text is not centered perfectly the first time you add the labels. Press the DONE key when you are finished.

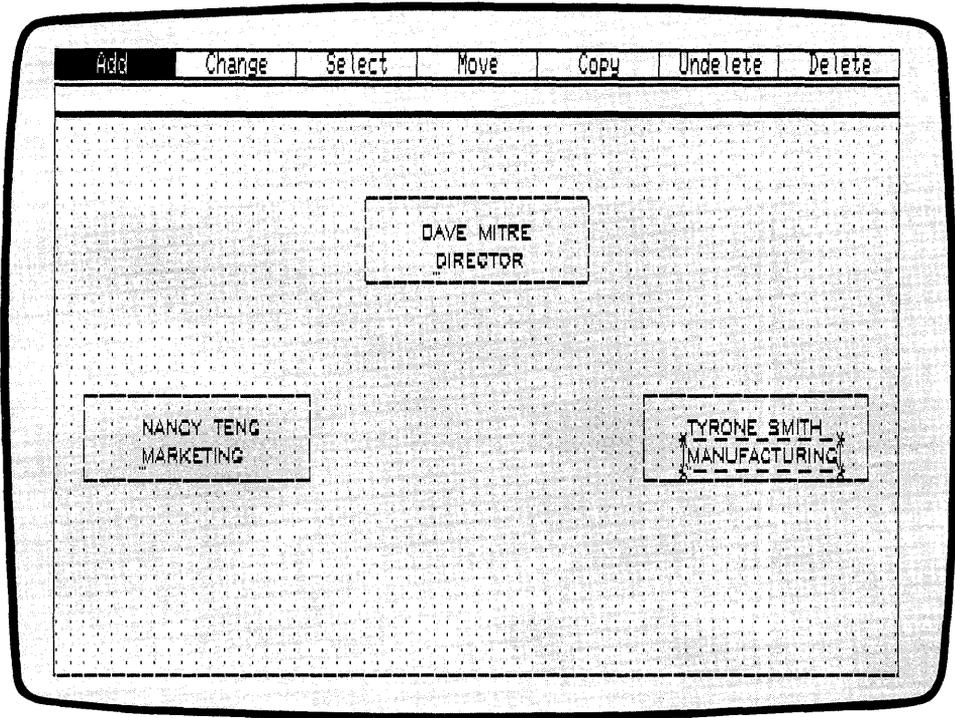


Figure 2-13. Labeled Boxes

CHANGE GRID

Before you join the labeled boxes with lines, change the grid density. A sparser grid of dots lets you more easily count grid points for centering lines.

From the Edit Menu, PICK the CHANGE function. When the Change Submenu appears, PICK the GRID function. The Grid Submenu replaces the Change Submenu. PICK the SIZE 2X function. The grid disappears, line by line, and a new, less dense grid appears on the drawing surface. The new grid is half as dense as the previous grid.

ADD LINES

To complete the chart, you need to join the rectangles with lines.

PICK the ADD function from the Edit Menu. When the Add Submenu appears, PICK the LINES design element.

DR Draw tells you

PICK points, press DONE when finished

Use PICK to draw line segments between the boxes. Starting from the lower right corner of the top box, move the cursor 4 grid points to the left. Because the cursor snaps to the nearest grid point when you PICK, move the cursor close to the center grid point on the box's lower edge. See Figure 2-14. PICK the point. The cursor snaps to the nearest grid point.

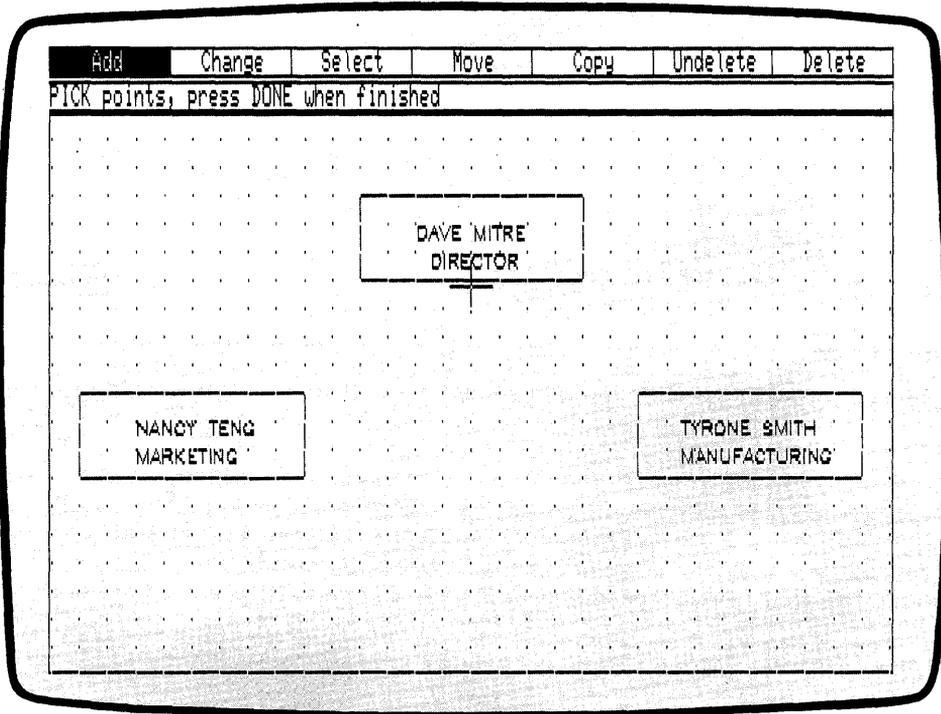


Figure 2-14. Cursor Position (Adding Lines)

Move the cursor down 2 grid points and PICK. A line appears between the two points. Now you want to create two line segments that branch out to the remaining boxes. Move the cursor 10 grid points to the right. PICK the point.

Now move the cursor down 2 grid points and PICK. A line joins the two boxes. See Figure 2-15.

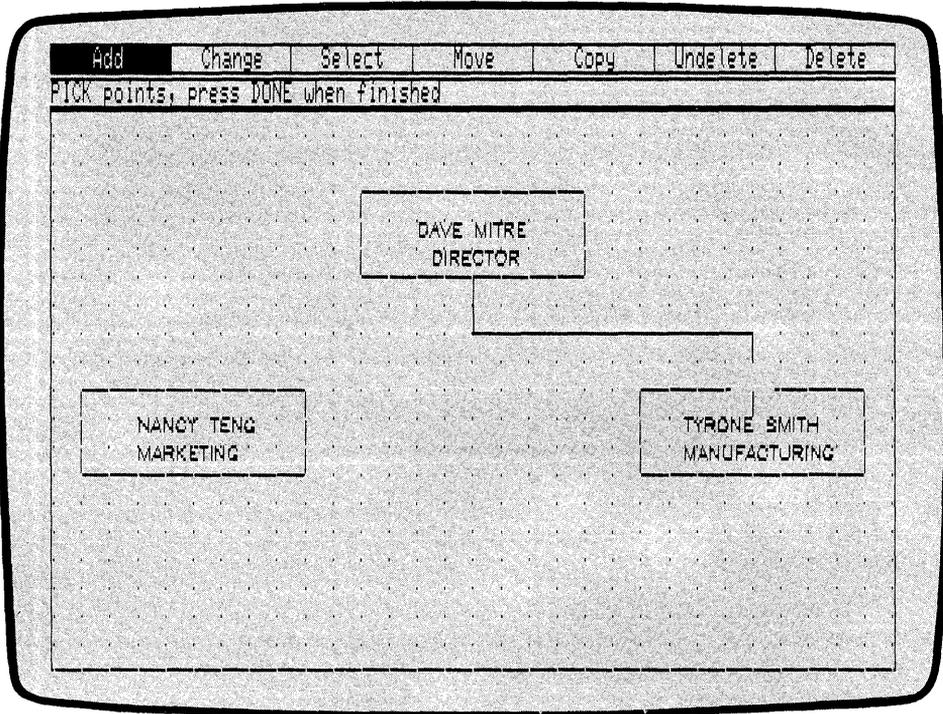


Figure 2-15. Boxes Joined with Line

You now want to join the box on the left to the rest of the diagram. You can do this by pressing the DONE key and PICKing the LINES design element again from the Add Submenu, or you can retrace your steps by completing the following instructions.

Move the cursor back up 2 grid points and PICK again.

Your figure looks the same because you have drawn a line on top of another line. Move the cursor 20 grid points to the left. PICK the point.

As you move the cursor, the right side of your line may disappear. The rubberband line following the cursor creates this effect. Your line is still there.

To draw the final line, move the cursor down 2 grid points and PICK.

Press the DONE key to complete the line element. Notice that the extent traces a rectangle around the entire line element.

You have drawn a simple organizational chart with DR Draw. The advanced tutorial in Section 3 teaches you how to expand this chart into the organizational chart shown in Figure 2-1.

SAVE A PICTURE

Now that your chart is complete, you can save it on diskette for future reference.

Press the DONE key. The organizational chart, window frame, and grid disappear. The Main Menu replaces the Edit Menu at the top of your screen.

PICK the SAVE function. DR Draw prompts

B:CHART? (or type new name)

DR Draw is giving you the opportunity to change the filename. Changing a filename is discussed in "Rename Picture File" later in this tutorial. You can also change the drive identifier if you want to store the picture file in a different drive. Refer to "Create A Picture File" at the beginning of this section for an explanation of drive identifiers.

To keep the same picture filename and drive identifier, press the RETURN key. DR Draw replies

```
B:CHART: saving file
```

CHECK DIRECTORY

Now check your directory of picture files to ensure CHART has been saved on the diskette.

To list the picture files on diskette, PICK the DIRECTORY function from the Main Menu. DR Draw prompts

```
On which drive?
```

Type the letter of the drive that contains your picture diskette and press the RETURN key. DR Draw lists the picture files on the diskette. Check to see if the picture file CHART is listed. DR Draw returns you to the Main Menu. The directory remains on the screen until you PICK another function and it uses the drawing surface.

RECALL PICTURE FILE

To retrieve your picture file to display or modify it, use the RECALL function. In this case you will be preparing the picture file for printing.

PICK the RECALL function from the Main Menu. DR Draw prompts

```
B:CHART? (or type new name)
```

Press the RETURN key. DR Draw prompts

```
B:CHART: reading file
```

DR Draw draws your chart on the screen and displays the Edit Menu. The first element created, a box, is now the current element.

LAYOUT

Before you print the picture file, use the LAYOUT function to format your picture file. DR Draw only prints the portion of a picture file that lies within the layout. Elements outside the layout are not printed even though they are part of the picture file.

DR Draw gives you a choice of three layouts: PORTRAIT, LANDSCAPE, and SCREEN. The examples in Figures 2-16a through 2-16c illustrate the three different layouts.

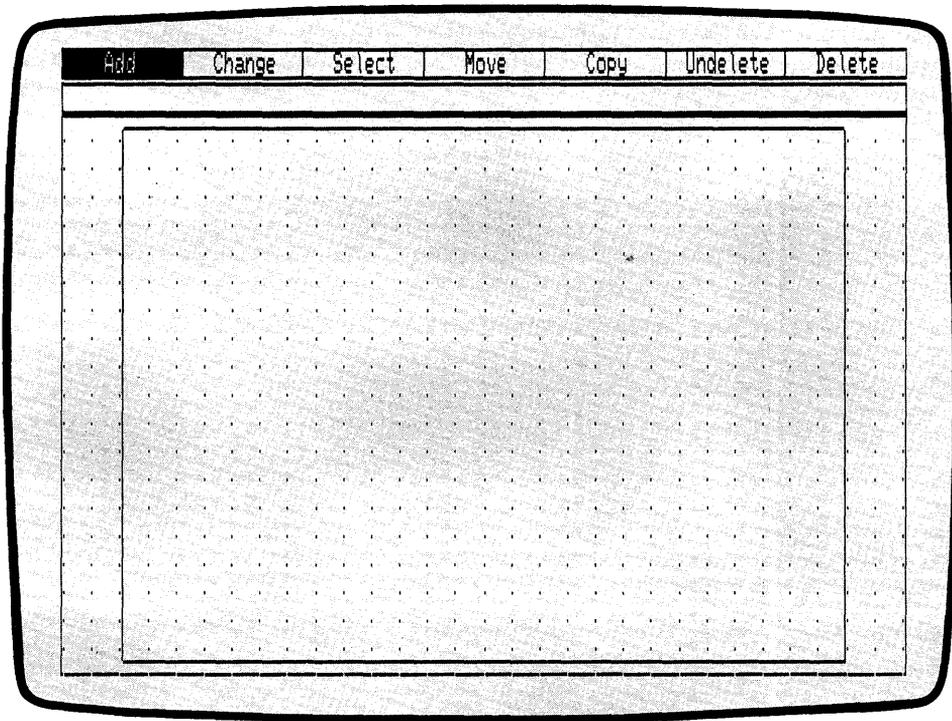


Figure 2-16a. LANDSCAPE Layout

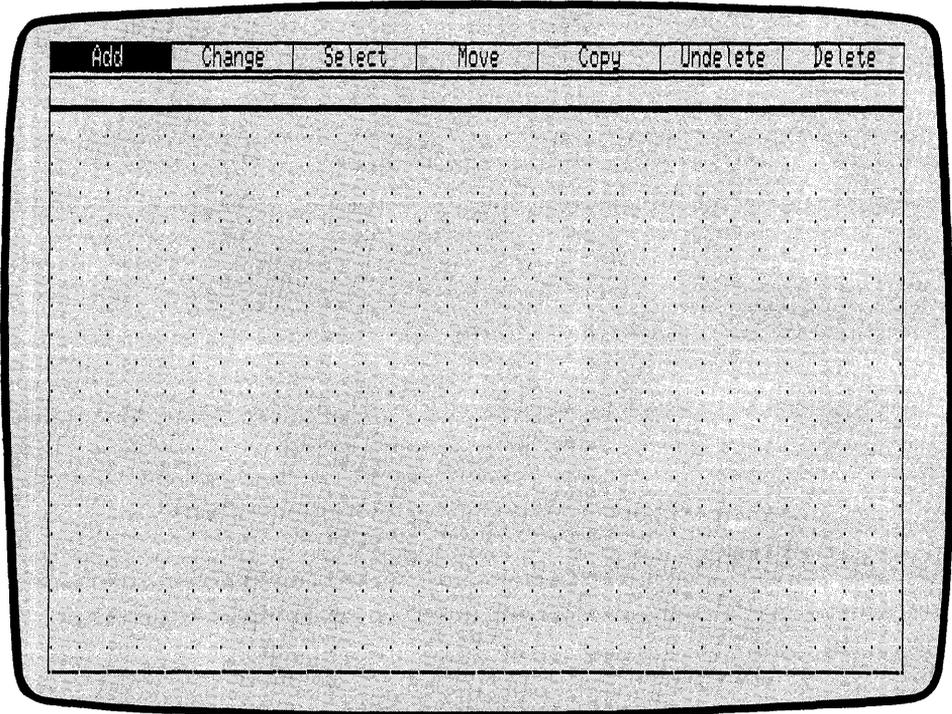


Figure 2-16b. SCREEN Layout

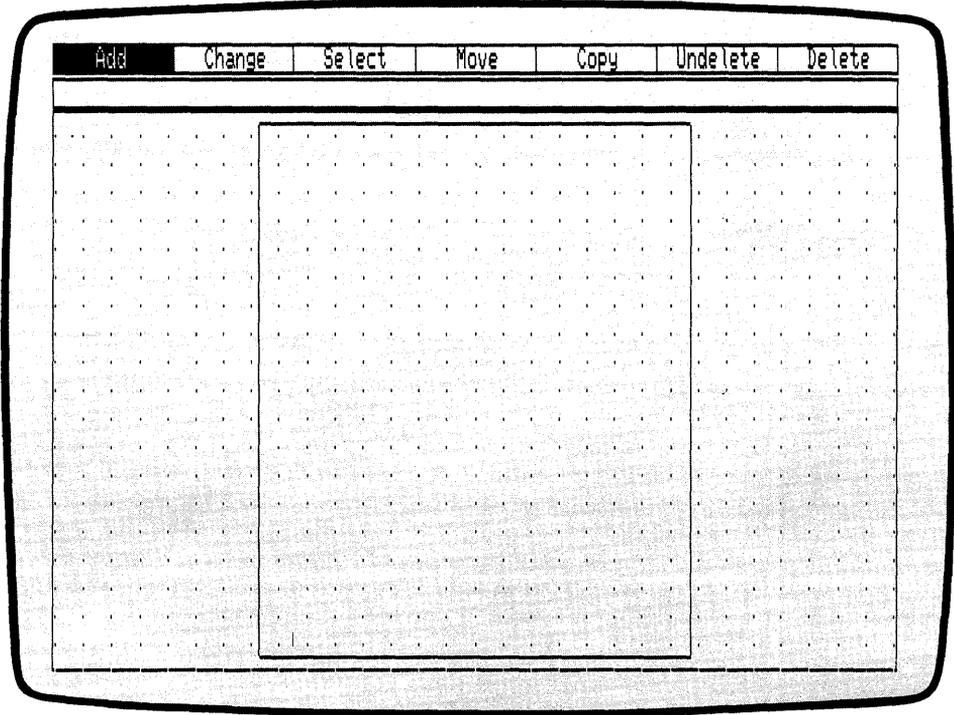


Figure 2-16c. PORTRAIT Layout

SCREEN is the default layout, the format that DR Draw uses if you do not select a layout.

Now look at how LAYOUT can affect the picture file. PICK the CHANGE function from the Edit Menu. When the Change Submenu appears, PICK the LAYOUT function. The Layout Submenu appears. PICK the PORTRAIT layout. DR Draw adds a solid-line rectangle to the grid. You can see that part of the chart lies outside the PORTRAIT layout.

Now try the LANDSCAPE layout. PICK the CHANGE function from the Edit Menu. When the Change Submenu appears, PICK the LAYOUT function. PICK the LANDSCAPE layout from the Layout Submenu. DR Draw replaces the PORTRAIT layout with the LANDSCAPE layout. Note that in this case LANDSCAPE, like PORTRAIT, does not frame all the elements in the organizational chart.

Refer to Section 5 for more details on the LAYOUT function.

ZOOM FULL

You can fit the organizational chart into the LANDSCAPE layout by using DR Draw's ZOOM FULL function. ZOOM FULL reduces or enlarges the picture file to fit the current layout.

From the Edit Menu, PICK the CHANGE function. When the Change Submenu appears, PICK the VIEW function. The View Submenu appears on the screen. PICK the ZOOM FULL function. DR Draw proportionally reduces the contents of the picture file to fit the LANDSCAPE layout.

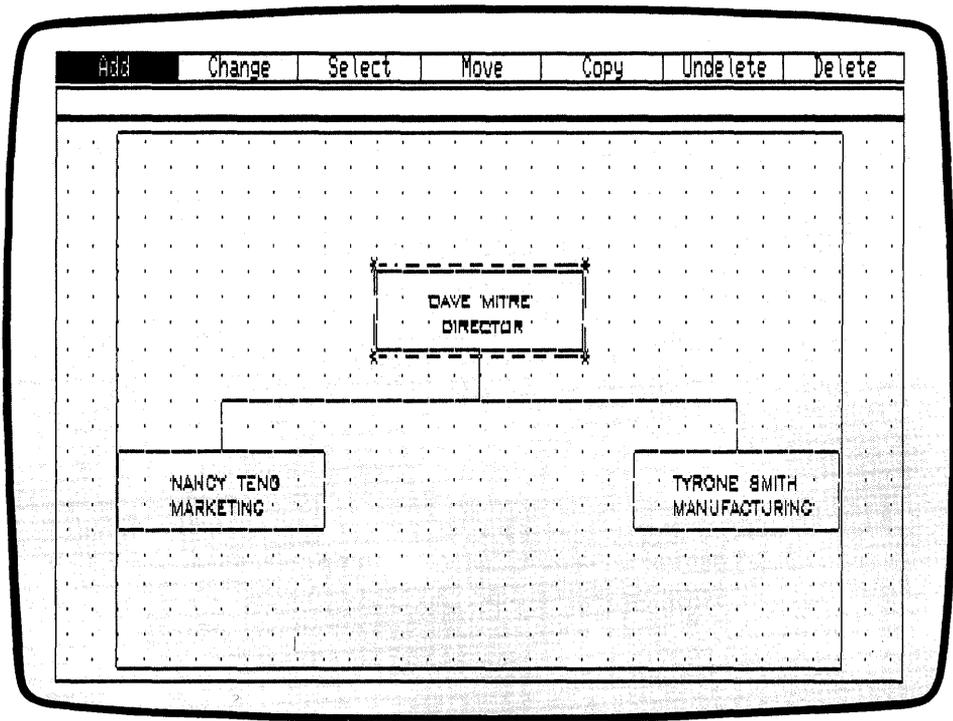


Figure 2-17. Organizational Chart in LANDSCAPE Layout

RENAME PICTURE FILE

You can only print a picture file when it is saved on diskette. Press the DONE key to return to the Main Menu. PICK the SAVE function from the Main Menu. DR Draw prompts

B:CHART? (or type new name)

Because you need to keep the original CHART for the advanced tutorial in Section 3, you must rename this version of the picture file. To rename the picture file, type

```
B:CHART2
```

in response to the prompt, and press the RETURN key. DR Draw displays this message:

```
B:CHART2: saving file
```

When the message disappears, DR Draw has saved the new picture file on diskette.

You now have two versions of the organizational chart on your picture diskette. CHART is your original version in SCREEN layout. CHART2 contains the same design elements, but the file is in LANDSCAPE layout.

If you had pressed the RETURN key without typing a new filename, DR Draw would have replaced the version of CHART saved on your diskette with the version on which you have been working.

PRINT PICTURE

Use the OUTPUT function to print the picture file CHART2.

PICK the OUTPUT function from the Main Menu. DR Draw displays a new menu that offers a choice of output devices.

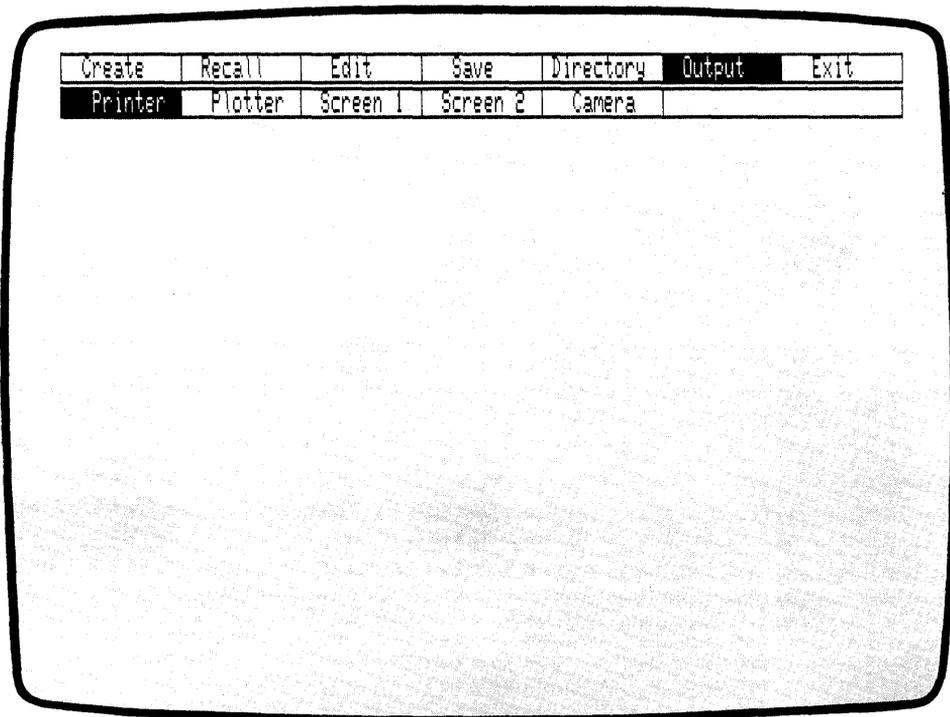


Figure 2-18. Output Submenu

PICK PRINTER from the Output Submenu. The Output Submenu disappears and DR Draw prompts

B:CHARTZ? (or type new name)

Press the RETURN key.

After a pause, the picture file begins to print. When printing is complete, the Main Menu reappears.

Congratulations, you have completed the first sample drawing in this tutorial and learned some basic DR Draw functions in the process. The sample picture that follows introduces you to more DR Draw functions.

If you want to take a break from the tutorial, PICK the EXIT function from the Main Menu to return to the operating system. The operating system prompt appears, which signals your departure from DR Draw. To restart DR Draw, follow the instructions in the *Supplement*.

CREATE A DESIGN

In addition to creating charts and other diagrams, DR Draw allows you to create designs or pictures. In this part of the beginning tutorial, you use DR Draw to create a pencil design.

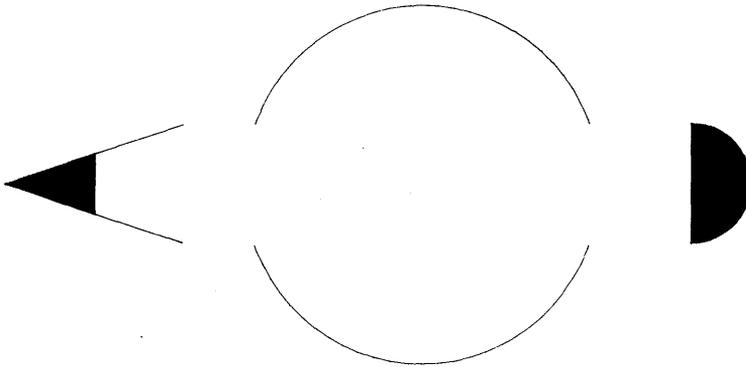


Figure 2-19. Pencil Design

If you took a break from the tutorial and exited DR Draw, restart DR Draw. If you do not remember how to do this, refer to the *Supplement*.

**CREATE A
PICTURE FILE**

To begin, create a picture file in the same way you created CHART.

From the Main Menu, PICK the CREATE function. DR Draw prompts you for a filename:

Picture filename?

Type the following, then press the RETURN key:

B:PENCIL

The rectangular window frame returns to the drawing surface. The Edit Menu replaces the Main Menu. You are ready to draw.

DRAW CIRCLE

Start by drawing a circle. PICK the ADD function from the Edit Menu. The Add Submenu appears below the Edit Menu. PICK the CIRCLE design element. The graphics cursor (+) appears at the center of the drawing surface and DR Draw prompts

PICK circle center

Position the cursor on the center grid point on the drawing surface and PICK. An asterisk marks the point. DR Draw now prompts

PICK circle radius

You are ready to tell DR Draw how large the circle will be. Move the cursor 6 grid points to the left and PICK. Another asterisk marks the point.

The graphics cursor disappears and a new submenu offers you the choice of creating an OPEN circle or a FILLED circle. An OPEN circle is a circular line. A FILLED circle is a circular line with one of several fill patterns inside.

PICK the OPEN circle. After a pause, the circle appears on the drawing surface, surrounded by the extent.

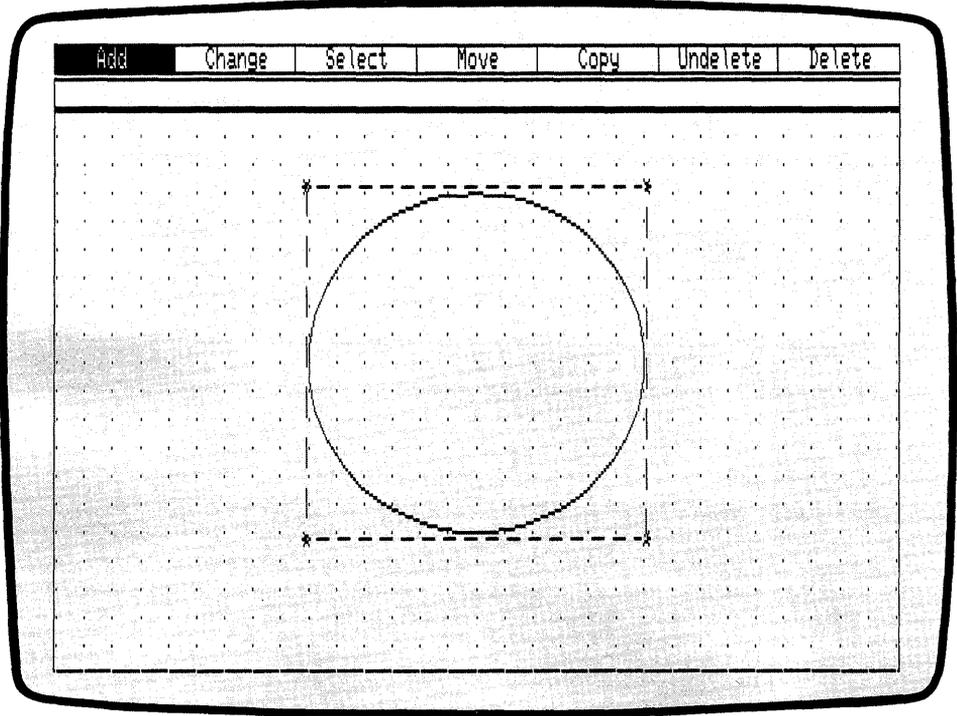


Figure 2-20. Circle and Extent

ADD POLYGON

Now add another element to the design. The POLYGON design element allows you to create a filled element with as many sides as you want. In this picture, you will be drawing a triangle.

From the Edit Menu, PICK the ADD function again. When the Add Submenu reappears, PICK the POLYGON design element.

The graphics cursor appears and DR Draw prompts

PICK points, Press DONE when finished

Starting from the center point of the circle you just created, move the cursor 14 grid points to the left and PICK. You have now marked a corner of the triangle. Now move the cursor up 1 grid point and 3 grid points to the right. PICK the second point. The first side of the triangle appears on the screen.

To draw the second side of the triangle, move the cursor down 2 grid points and PICK.

To rejoin the starting point, move the cursor 3 grid points to the left and 1 grid point up. PICK the point. Press the DONE key.

The cursor disappears, and the triangle turns solid. This solid fill is known as the initial style. If you do not specify another fill pattern, DR Draw assumes you want the solid fill. Notice that your screen shows the solid area in light shading. When you print or plot the picture, this area is black or solid colored. You will learn how to add or change colors in the "Color" subsection of this tutorial. For more information on the STYLE function, refer to Section 5.

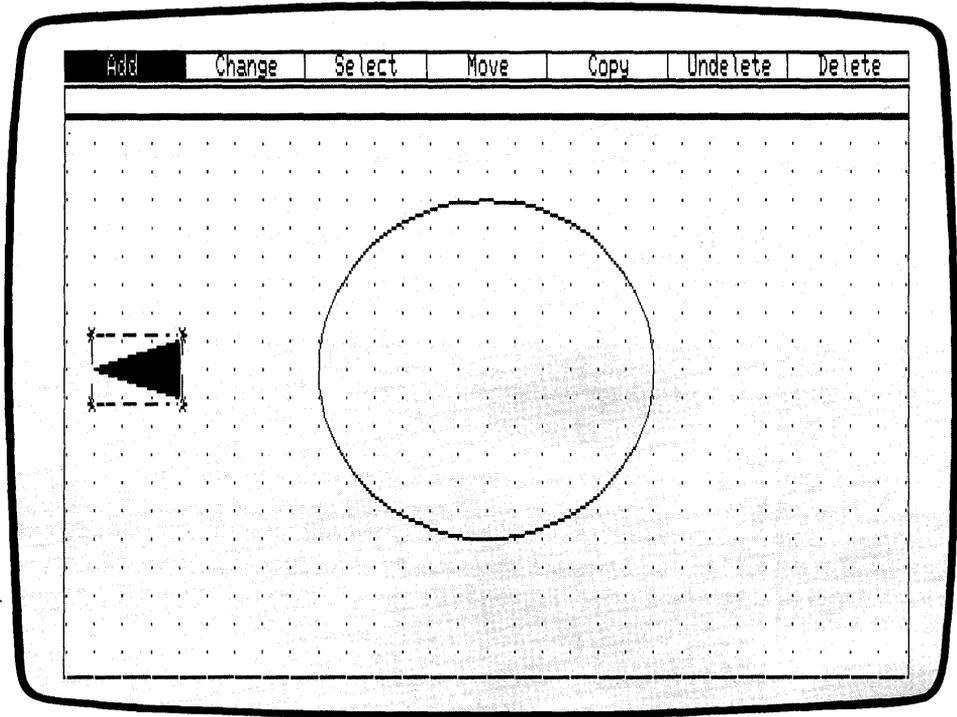


Figure 2-21. First Polygon

**ADD ANOTHER
POLYGON**

Now, use the POLYGON design element to add another element to the picture.

PICK the ADD function from the Edit Menu. When the Add Submenu appears, PICK the POLYGON design element.

The cursor reappears and DR Draw prompts

PICK points, Press DONE when finished

To locate a starting point, move the cursor to the upper right corner of the triangle you just created. PICK the point.

Move the cursor up 1 grid point and 3 grid points to the right. PICK the point to draw the first side of the polygon.

Move the cursor down 4 grid points and PICK again.

Draw the third side of the design element by moving the cursor 3 grid points to the left and up 1 grid point. PICK the point.

Complete the polygon by moving the cursor up 2 grid points. PICK the point. Press the DONE key. The solid fill appears in the polygon. The cursor disappears, and the extent encloses the polygon.

STYLE

To change the fill pattern of the polygon, use the STYLE function.

PICK the CHANGE function from the Edit Menu. When the Change Submenu appears, PICK the STYLE function. A menu of different fill patterns appears.

PICK the first fill pattern. The solid fill disappears, leaving the outline of the polygon. The new fill is the hollow fill. Although the element looks empty, the hollow fill masks any element underneath it. Refer to Section 4 for details on hollow fill.

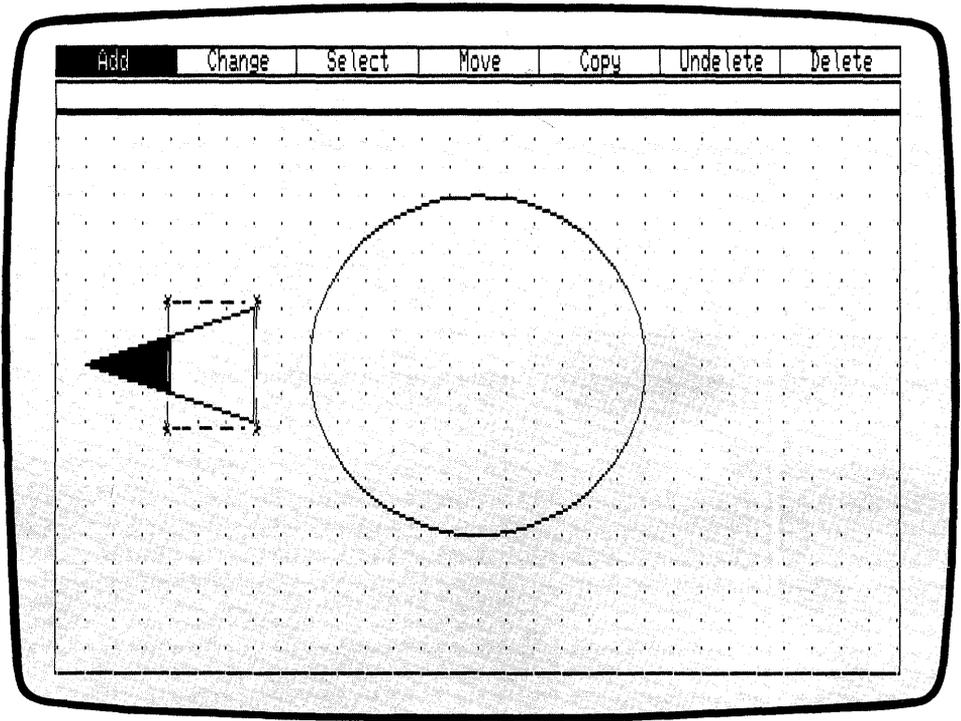


Figure 2-22. Second Polygon

BARS

Now use the BAR design element to draw the body of the pencil. With the BAR design element, you can draw rectangles in all sizes, ranging from long, thin bars to squares. From the Edit Menu, PICK the ADD function. From the Add Submenu, PICK the BAR design element. DR Draw prompts

PICK corner of bar

You define the bar by choosing corners that are diagonally opposite each other.

Move the cursor to the lower right corner of the hollow-filled polygon and PICK. An asterisk marks the point. DR Draw prompts

PICK opposite corner of bar

Move the cursor up 4 grid points, then 16 grid points to the right. PICK the point. A hollow bar appears, and the extent encloses the new element.

Now change the new element's fill to a solid fill. PICK the CHANGE function from the Edit Menu. When the Change Submenu appears, PICK the STYLE function. From the menu of fill patterns, PICK the second style. The solid fill replaces the hollow fill in the bar.

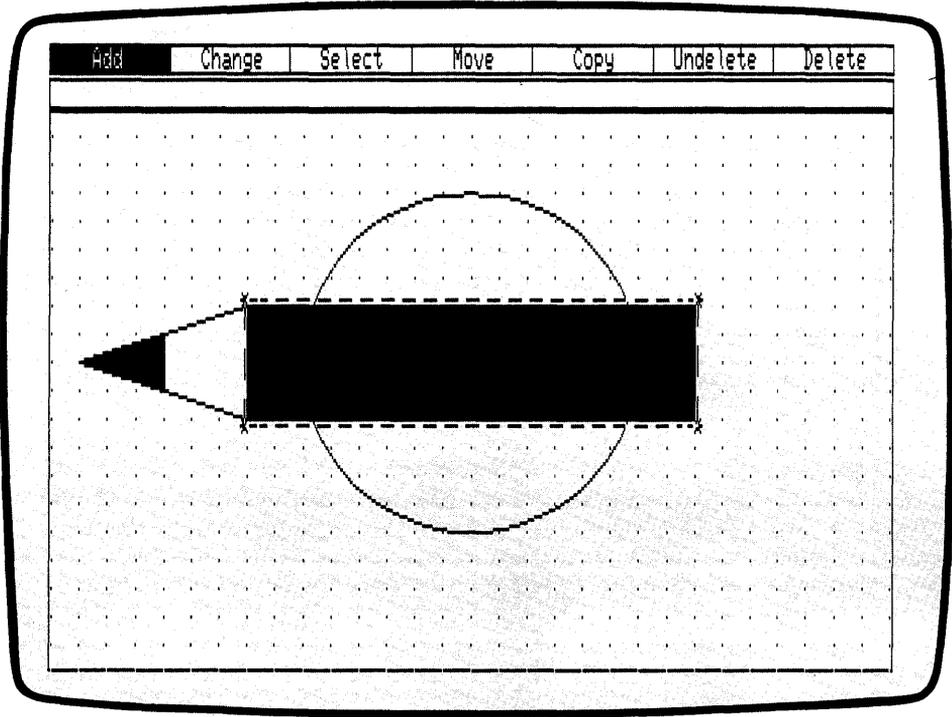


Figure 2-23. Bar

You have now created three different elements and are well on your way to completing the picture.

COLOR (OPTIONAL) The DR Draw COLOR function allows you to add color to your design elements. If your computer or output devices have color capabilities, you will want to experiment with the COLOR function. Skip this section if neither your computer nor output devices have color capability.

To see the Color Submenu, PICK the CHANGE function from the Edit Menu. From the Change Submenu, PICK the COLOR function.

The Color Submenu contains eight rectangles numbered 0 through 7. On some color monitors the rectangles also contain the color represented by the number.

Printers and plotters do not necessarily have as many colors or the same colors as the monitor. For example, your monitor might have four colors, and your printer might only have three. In addition, color number 2 on your monitor might be blue, but on your printer it might be magenta.

To learn which colors you have on your monitor and printer or plotter, you can make a sample color file, as described in the description of the COLOR function in Section 5.

If you are working with a monochrome monitor, design elements remain monochrome on the display screen, but you can still print or plot in color.

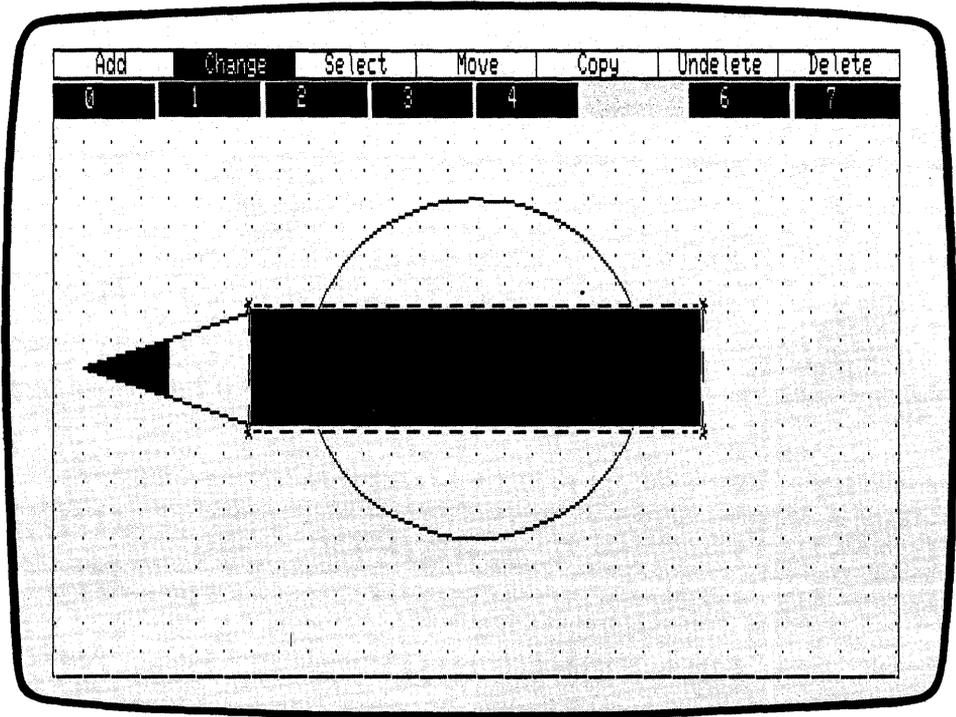


Figure 2-24. Color Submenu

CHANGING COLOR

To change the color of the BAR design element, PICK color number 3 from the submenu. The Color Submenu disappears. If you are working in color on the screen, the bar changes its color to the hue corresponding to number 3 in the menu.

ARCS

Use the ARC design element to finish creating the pencil. An arc is either part of the circumference of a circle, or it is a filled pie section. For more information on arcs, see the description of the ARC design element in Section 6.

To add an arc to the design, PICK the ADD function from the Edit Menu, then PICK the ARC design element from the Add Submenu. DR Draw prompts

PICK arc center

Move the cursor down 2 grid points from the upper right corner of the bar, then 1 grid point to the right.

PICK the point. An asterisk marks the arc center. DR Draw prompts

PICK arc radius/beginning of arc

Move the cursor down 2 grid points and PICK. Another asterisk appears and DR Draw prompts

PICK end of arc

Move the cursor up 4 grid points and PICK the point. Before the arc appears, DR Draw asks you if you want the arc OPEN or FILLED. PICK a FILLED arc. After a pause, the arc appears. The arc completes the pencil figure. You have created a drawing that demonstrates some of DR Draw's many functions.

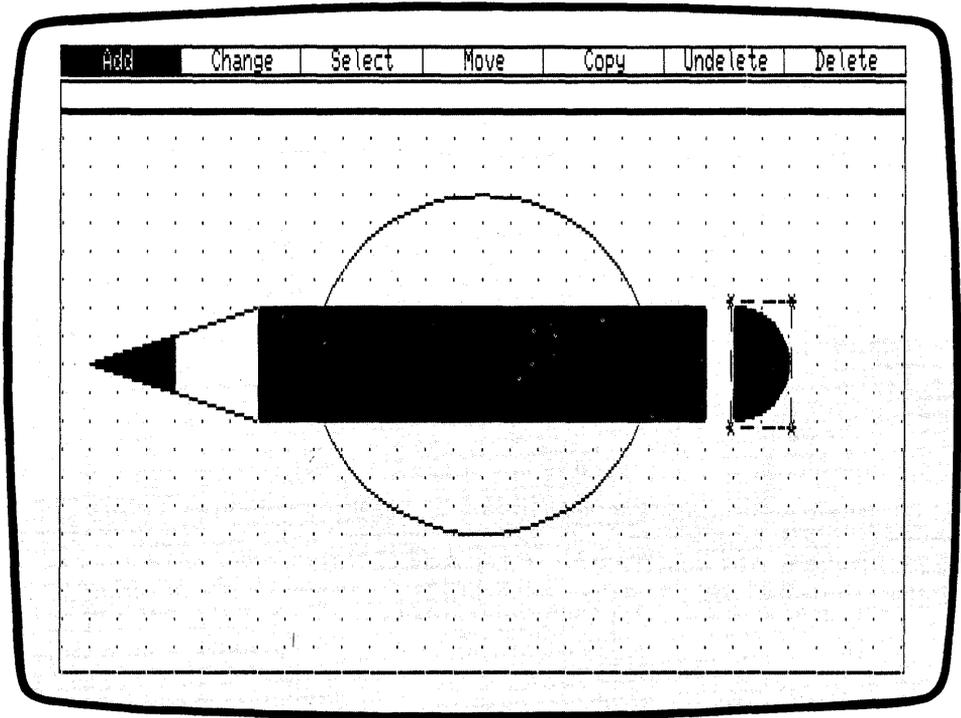


Figure 2-25. Arc Element

SAVE THE PICTURE

You need to save your drawing for the advanced tutorial in Section 3, where you will add some new twists to the design. Press the DONE key to return to the Main Menu. The pencil drawing disappears.

From the Main Menu, PICK the SAVE function. DR Draw prompts

B:PENCIL? (or type new name)

If you want to save the picture file on this drive and with this name, press the RETURN key. DR Draw prompts

B:PENCIL: saving file

If you want to save the picture file on another drive, type the new drive identifier, a colon, and the filename. For example,

A:PENCIL

Then press the RETURN key.

When the prompt disappears, DR Draw has saved the picture file on diskette. You return to the Main Menu.

If you wish to print the PENCIL picture, refer to the print instructions in "Print Picture" in this tutorial.

EXIT DR Draw

Congratulations, you have completed the first tutorial. If you want to leave DR Draw, PICK the EXIT function. The operating system prompt signals your return to the operating system. If you want to review what you have learned, try the tutorial again. If you are ready to learn new DR Draw functions, turn to Section 3. In its advanced tutorial, you learn DR Draw functions that let you

- SELECT a new current element
- SCALE element size
- ZOOM in on parts of the drawing surface
- PAN across the drawing surface
- adjust the relationship of overlapping design elements with the PUT TO BACK function

End of Section 2

Section 3

ADVANCED TUTORIAL

INTRODUCTION

Building on concepts learned in Section 2, you learn in this tutorial how to do the following:

- pan across the drawing surface
- change the style for LINES
- zoom full
- select a new current element
- zoom out from the drawing surface
- zoom in on the drawing surface
- scale an element
- use PUT TO BACK to change the relationship of overlapping design elements

First you will add more boxes to the organizational chart you created in Section 2. Next you will use DR Draw to enhance the pencil drawing you created.

RECALL THE PICTURE FILE

Begin by displaying your original picture file of the organizational chart. From the Main Menu, PICK the RECALL function. DR Draw displays one of two prompts

If you exited from DR Draw after completing the Getting Started tutorial, you see the prompt:

Picture filename?

If you did not exit, DR Draw retains the name of the last file you saved, and you see the prompt:

B:PENCIL? (or type new name)

In either case, to recall the file CHART, type the drive identifier and filename:

B:CHART

Press the RETURN key. DR Draw prompts

B:CHART: reading file

The organizational chart appears on the screen, along with the Edit Menu.

PAN

The PAN function allows you to move the window frame horizontally, vertically, or diagonally across the drawing surface. In this way, you can add design elements to areas of the drawing surface that are not currently inside the window frame.

PICK the CHANGE function from the Edit Menu. From the Change Submenu, PICK the VIEW function. The View Submenu appears under the Edit Menu.

PICK the PAN function. DR Draw indicates the center of the window with intersecting horizontal and vertical lines. You see the prompt

PICK new center of window

Starting at the center of the window (the intersection of the two lines), move the cursor 10 grid points to the left, then down 1 grid point. PICK the point. DR Draw redraws the chart with the point you PICKed now at the center.

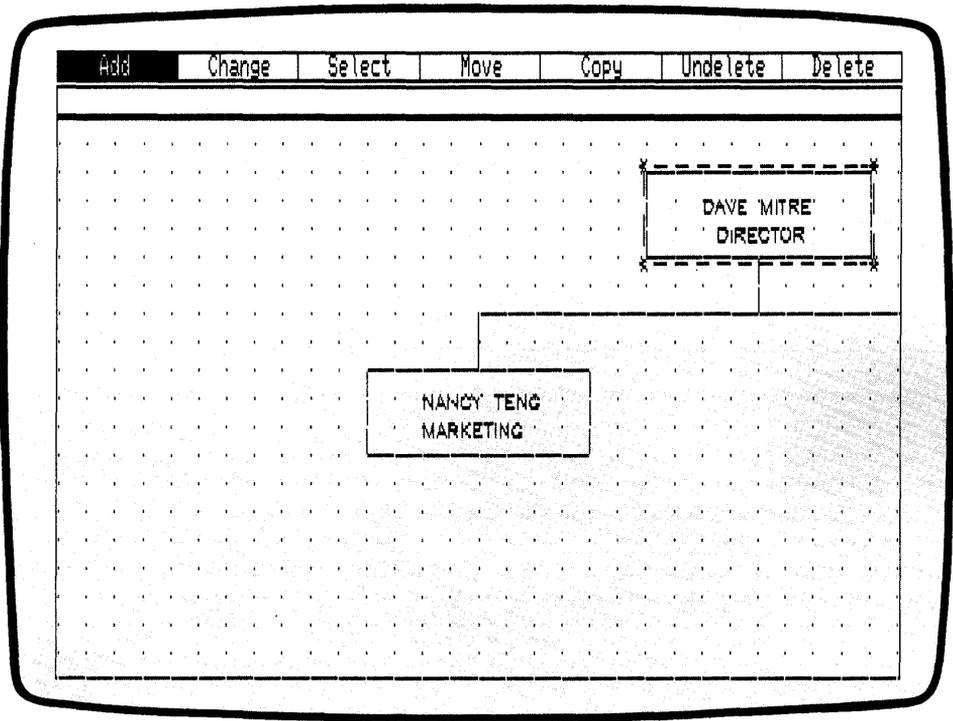


Figure 3-1. Chart, Pan Left

COPY

Now you want to add more boxes to the chart. You can do this by copying one of the existing boxes. The extent marking the current element encloses the upper box of the chart. To copy that element, PICK the COPY function from the Edit Menu. DR Draw prompts

PICK reference point

Move the cursor to the upper left corner of the extent. PICK the point. DR Draw tells you

PICK location(s); Press DONE to finish

Starting from the reference point you PICKed, move the cursor down 14 grid points, then 4 grid points to the left. PICK this point. A new box appears on the drawing surface.

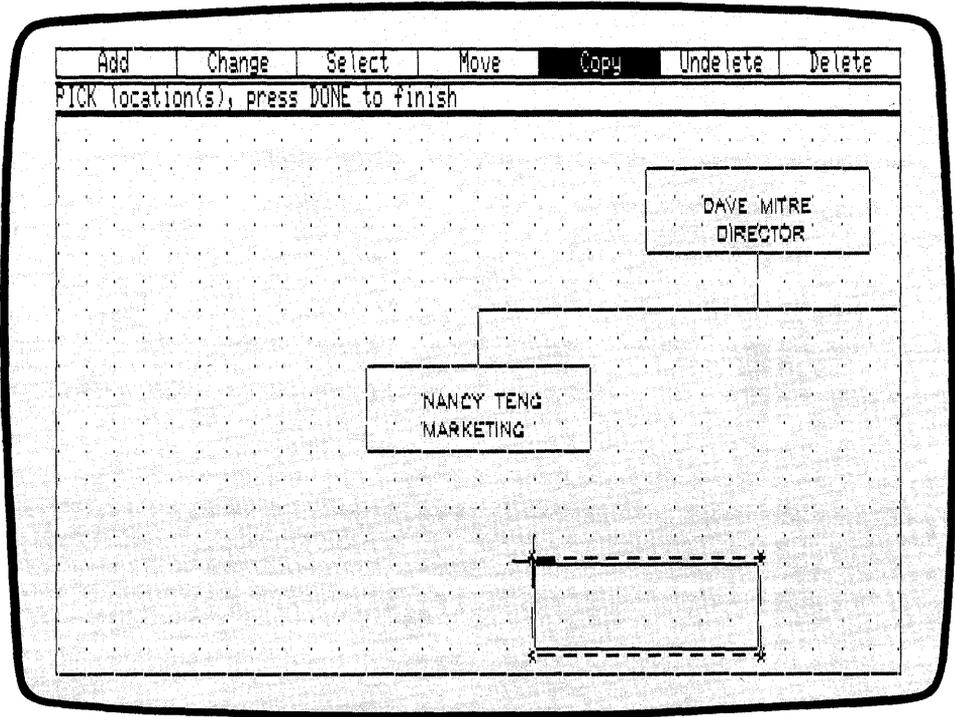


Figure 3-2. New Box

To add another box to the chart, start from the upper left corner of the new current element, and move the cursor 12 grid points to the left. PICK the point. Another box appears.

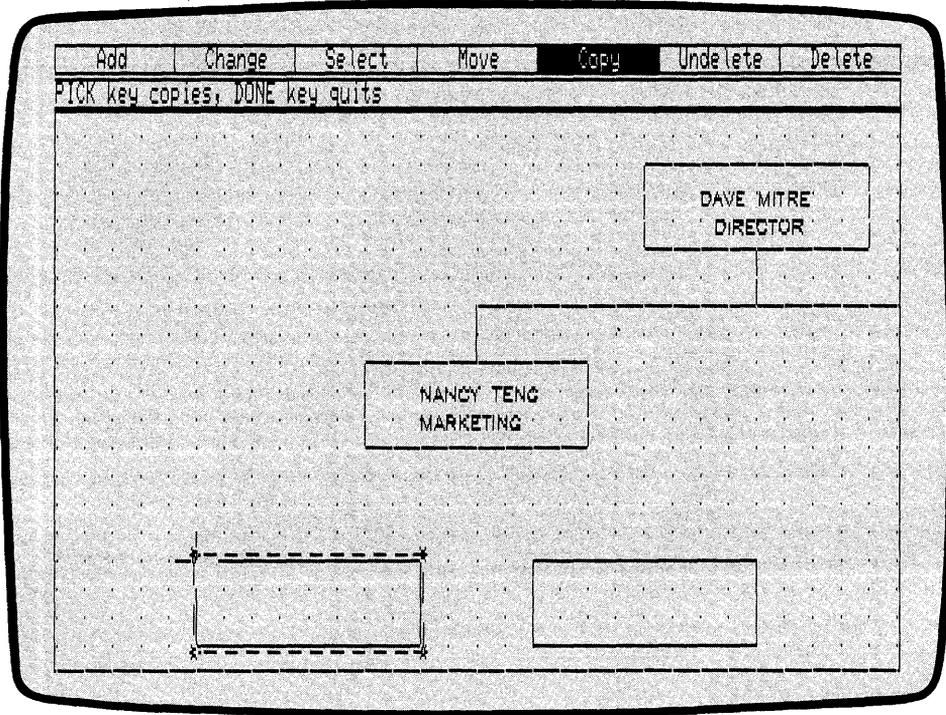


Figure 3-3. Second New Box

Add one more box to the chart. Starting from the last point you picked, move the cursor up 5 grid points, then 5 grid points to the left. PICK the point. The final box in the chart appears. Press the DONE key to finish copying.

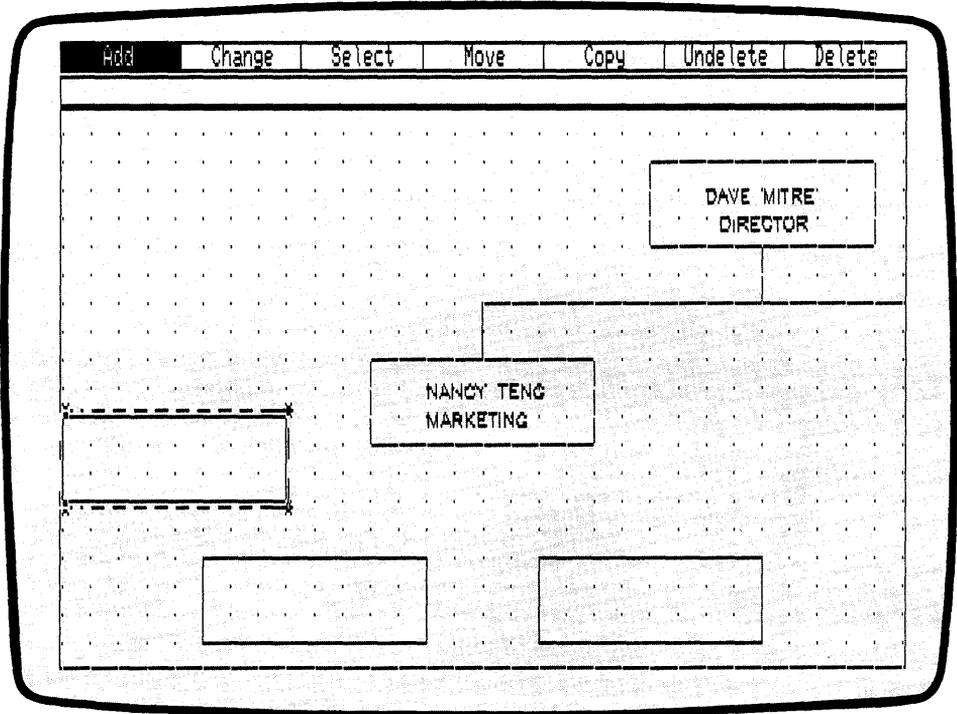


Figure 3-4. Third New Box

**ADD AND CHANGE
TEXT**

Your new boxes need to be labeled. First make the grid more dense by using the functions you learned in "Change Grid Size" in Section 2.

After you have changed the grid, PICK the ADD function from the Edit Menu. When the Add Submenu appears, PICK the TEXT design element. DR Draw prompts

```
PICK start, type, RETURN; DONE finishes
```

Move the cursor to the lower left corner of the last box. Move the cursor up 3 grid points, then 4 grid points to the right. PICK the point, and type

```
TINA GANZ
```

in the box. Press the RETURN key to end the text string. Press the DONE key to finish entering text and return to the Edit Menu.

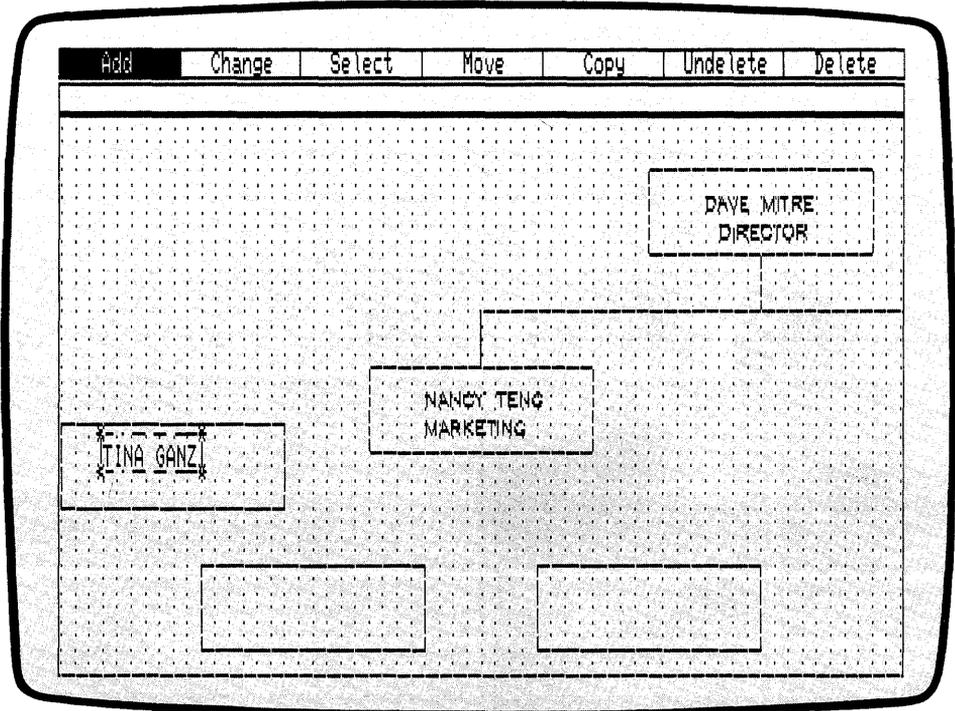


Figure 3-5. Label In Box

The text you entered differs from the text in the original boxes. When you saved the CHART picture file, the current text style reverted to the machine font.

To change the font style to Simplex Roman, PICK the CHANGE function from the Edit Menu. From the Change Submenu, PICK the STYLE function. The menu of font styles appears.

PICK the Simplex submenu selection. The name TINA GANZ appears in the font Simplex Roman.

Now add a title to the box. PICK the ADD function from the Edit Menu. PICK the TEXT design element from the Add Submenu. Use the lower left corner of the TINA GANZ box as a starting point. Move the cursor 3 grid points to the right and up 1 grid point. PICK the point and type

CONSULTANT

As you type, the text appears in the machine font with the bouncing extent. When you press the RETURN key, the font Simplex Roman replaces the machine font.

Fill in the remaining boxes, using the labels in Figure 3-6. Now that you have changed the text font style, all new text strings appear in the font Simplex Roman. Press the RETURN key at the end of each text string, and move the cursor to the point at which the next string will begin.

You can correct typing errors with the BACKSPACE key. If you have already pressed the RETURN key, you can press the DONE key to finish entering text, then PICK the DELETE function to erase the string you just entered. If the string is not correctly located in the box, you can relocate it with the MOVE function. For details on the DELETE and MOVE functions, refer to Section 5.

Press the DONE key when you are finished.

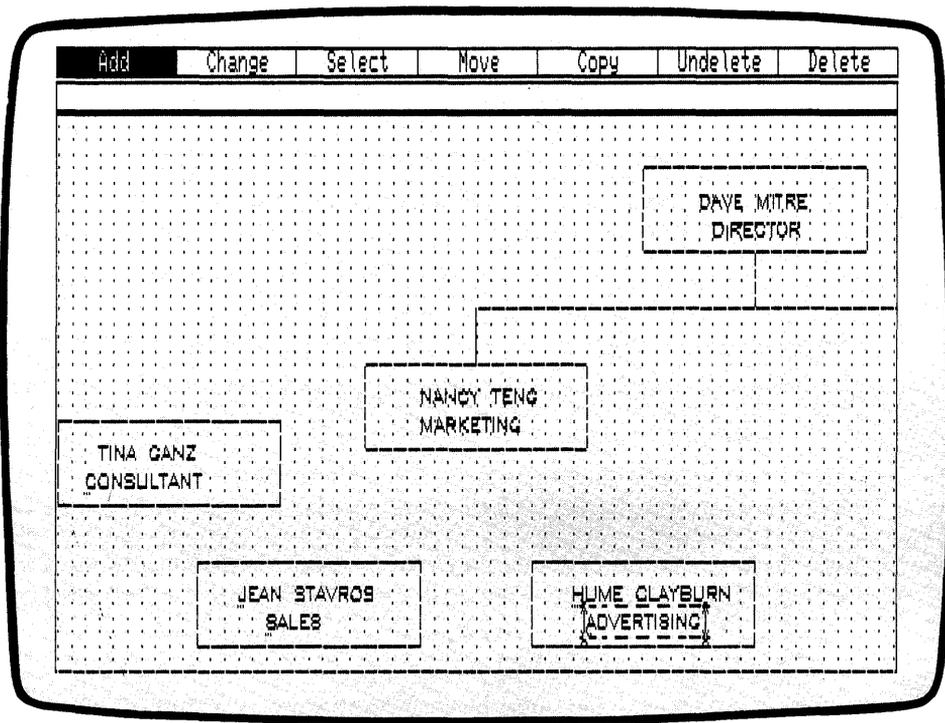


Figure 3-6. Labeled Boxes

ADD LINES

Now use the LINES design element to join the new boxes to the rest of the chart. First make the grid less dense. PICK the CHANGE function from the Edit Menu. From the Change Submenu, PICK the GRID function, then PICK the SIZE 2X function from the Grid Submenu. A sparser grid returns to the drawing surface.

Now PICK the ADD function from the Edit Menu. When the Add Submenu appears, PICK the LINES design element. DR Draw prompts

PICK points; Press DONE when finished

Locate the cursor at the upper left corner of the box labeled HUME CLAYBURN. Move the cursor 4 grid points to the right and PICK.

Move the cursor up 2 grid points and PICK again. DR Draw draws a line between the two points.

Now move the cursor 6 grid points to the left and PICK. Move the cursor up 2 grid points and PICK again. Two boxes are joined.

To join these boxes to the SALES box, retrace the last line segment by moving the cursor down 2 grid points and PICKing. Now move the cursor 6 grid points to the left and PICK again.

Finally, move the cursor down 2 grid points and PICK. Press the DONE key. The cursor disappears and the extent appears around the line.

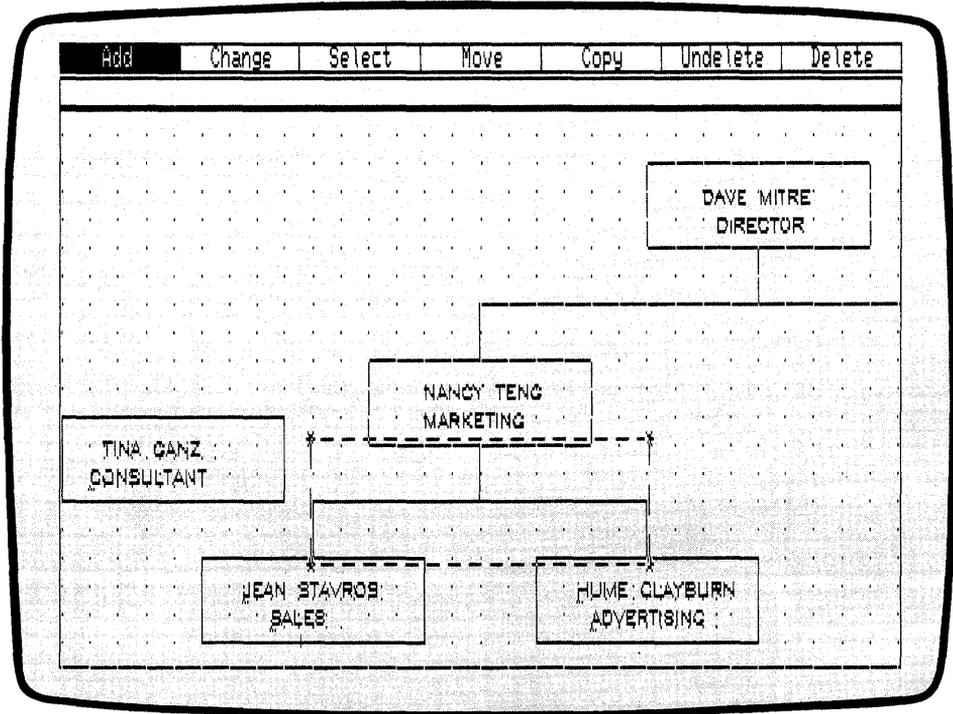


Figure 3-7. Lines Added

Now join the CONSULTANT box to the rest of the chart. You need to start the line from the center of the box's right edge. To do this, you can make the grid more dense, or use SNAP OFF to turn the SNAP off, allowing you to PICK a point between grid points.

PICK the CHANGE function from the Edit Menu. From the Change Submenu, PICK the GRID function. When the Grid Submenu appears, PICK the SNAP OFF function. When the Grid Submenu disappears and the Edit Menu returns, DR Draw has turned off the SNAP.

Now add the final line to the organizational chart. PICK the ADD function from the Edit Menu. From the Add Submenu, PICK the LINES design element. DR Draw prompts

PICK points; Press DONE when finished

Center the cursor on the right edge of the box labeled CONSULTANT. If you are using the keyboard arrow keys, you can locate the cursor more easily by changing to the slow cursor speed. The vertical part of the cross hair disappears when the cursor is positioned directly over the line. See Figure 3-8. PICK the point.

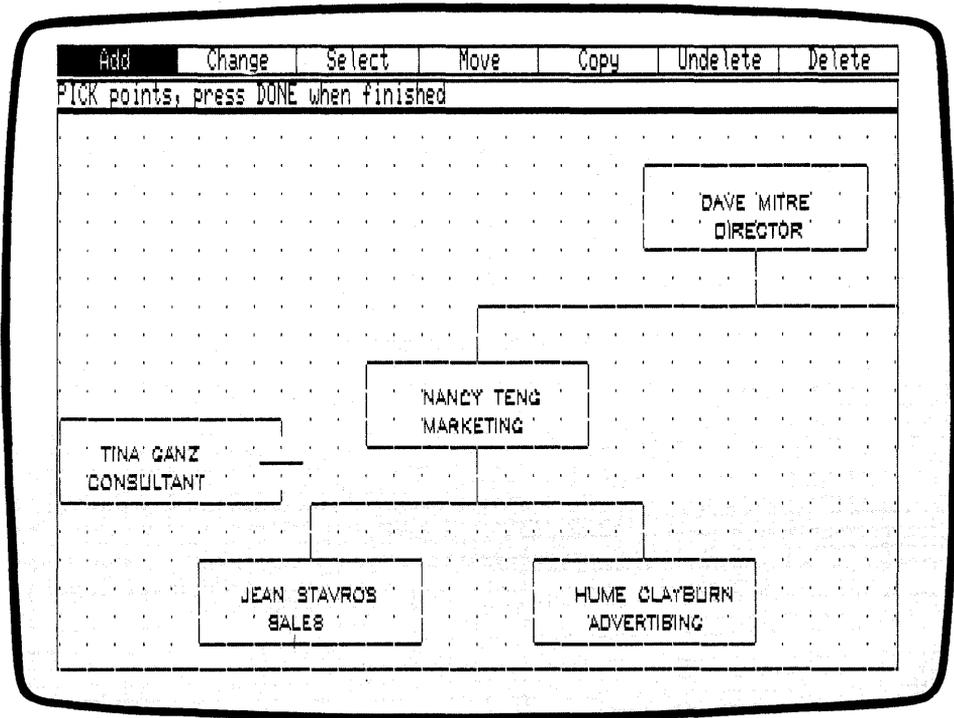


Figure 3-8. Cursor Position (Adding Lines)

Now move the cursor horizontally to the right, and center it over the line descending from the box labeled MARKETING. PICK the point. Press the DONE key. The cursor disappears, and the new extent marks the line as the current element.

Return to the GRID function and turn the SNAP function back on before continuing.

CHANGE LINE STYLE In an organizational chart, a broken line often indicates an indirect relationship. To illustrate such a relationship, change the style of the line you just added to the chart.

PICK the CHANGE function from the Edit Menu. From the Change Submenu, PICK the STYLE function.

PICK the dotted line, the third style in the menu. The dotted line replaces the solid line.

Now you are ready to use the LAYOUT and VIEW functions to prepare the picture file for output.

LAYOUT AND ZOOM FULL

Use the LAYOUT function to ready the organizational chart for output to a screen, printer, or plotter.

PICK the CHANGE function from the Edit Menu. When the Change Submenu appears, PICK the LAYOUT function. Next PICK the LANDSCAPE layout from the Layout Submenu. The LANDSCAPE layout appears on the drawing surface.

Now use the ZOOM FULL function to fit the picture file into the layout.

From the Edit Menu, PICK the CHANGE function. When the Change Submenu appears, PICK the VIEW function. The View Submenu appears below the Edit Menu.

PICK the ZOOM FULL function. DR Draw redraws and reduces the organizational chart so that it fits in the layout.

ADD A TITLE

Use the TEXT design element to add TUNNEY ELECTRONICS CORPORATION to the chart. Position the title above and to the left of the box labeled DAVE MITRE, and keep the title within the layout.

SAVE

Now that your chart is complete, you can save it for future editing, viewing, or output. Press the DONE key to return to the Main Menu. When the Main Menu appears, PICK the SAVE function. DR Draw prompts

B:CHART? (or type new name)

Enter a new filename so that the original picture file, CHART, will be available for practice. Type

B:CHART3

and press the RETURN key.

You can, if you wish, continue this tutorial when DR Draw finishes saving the file on diskette.

However, if you want to take a break from the tutorial, you can PICK the EXIT function from the Main Menu to return to the operating system.

**REPORT COVER
DESIGN**

Now use some new DR Draw functions to enhance the pencil design you created in Section 2. You could use such a design as a report cover.

If you need help restarting DR Draw, refer to the *Supplement* for instructions.

**RECALL PICTURE
FILE**

From the Main Menu, PICK the RECALL function. DR Draw displays one of two prompts.

If you exited from DR Draw, you see the prompt:

Picture filename?

If you did not exit, DR Draw retains the name of the last file you saved, and you see the prompt:

B:CHART3? (or type new name)

In either case, to recall the file PENCIL, type the drive identifier and filename:

B:PENCIL

Press the RETURN key. DR Draw displays the message

B:PENCIL: reading file

After a pause, the picture of the pencil appears on the screen.

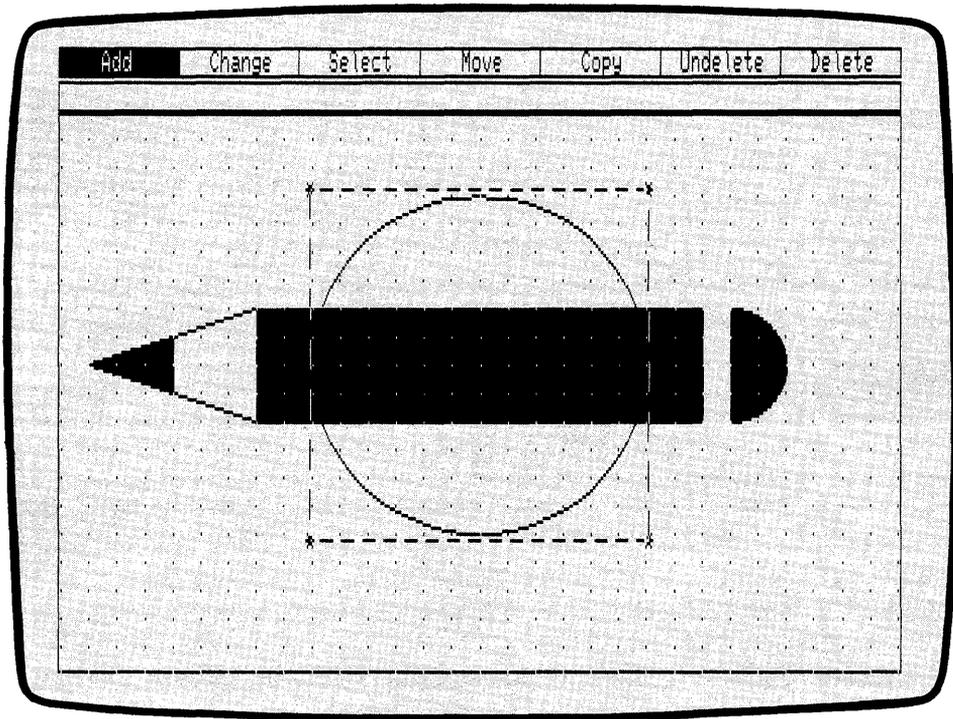


Figure 3-9. PENCIL Picture File

DELETE AND SELECT To begin changing the picture, delete the CIRCLE and ARC design elements from the drawing.

The extent surrounds the circle, so you can delete the element easily.

PICK the DELETE function from the Edit Menu. The circle disappears, and the extent appears around the triangle. An area of the pencil body corresponding to the circle outline also disappears. If you wish, redraw the picture as you learned in Section 2.

Now you want to DELETE the arc that forms the pencil's eraser. Because you can only DELETE the current element, you must SELECT the arc as the new current element. For more information on the current element, turn to Section 4.

PICK the SELECT function from the Main Menu. DR Draw prompts

PICK corner of rectangle

Move the cursor to a point slightly above and to the left of the arc. PICK the point. A pair of intersecting lines appears. DR Draw prompts

PICK opposite corner of rectangle

Move the cursor to a point slightly below and to the right of the arc. PICK the point. Another pair of intersecting lines appears. See Figure 3-10. DR Draw prompts

PICK moves second corner, DONE finishes

DR Draw lets you change the second corner if the two pairs of intersecting lines do not enclose the element you are selecting. For more information on selecting a current element, see the SELECT function in Section 5.

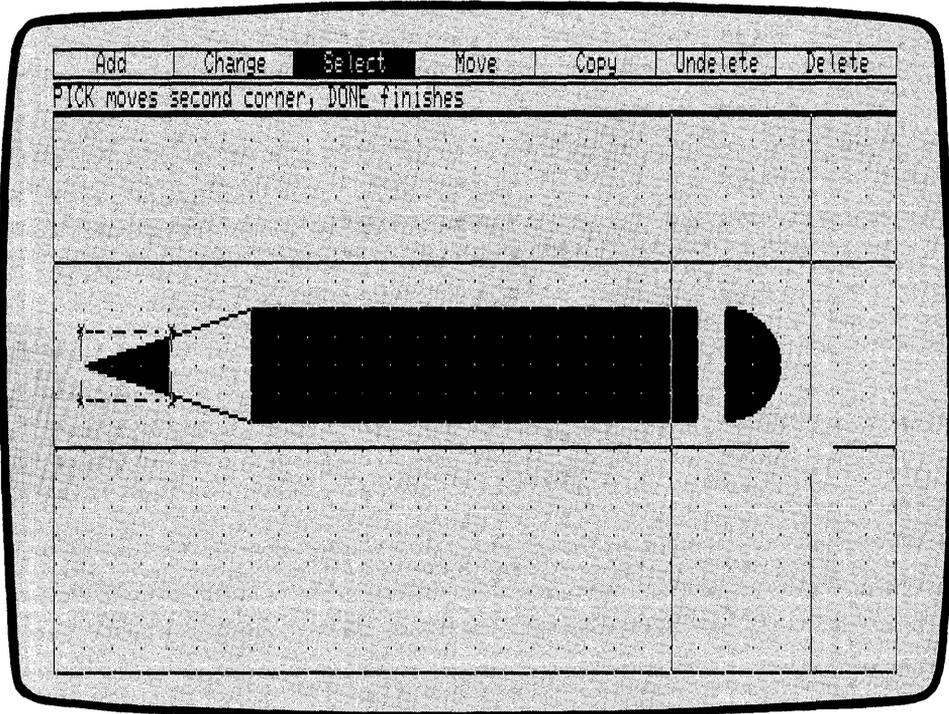


Figure 3-10. Pairs of Intersecting Lines Around Arc

If you are satisfied with the rectangle, press the DONE key. The extent appears around the arc, which indicates that the arc is now the current element.

PICK the DELETE function from the Main Menu. DR Draw removes the arc from the drawing surface. The extent appears around the bar, which you drew just before the arc. The bar is now the current element.

ZOOM OUT

Now you are going to make the pencil longer. First, you need more room on the drawing surface. You can use the ZOOM OUT function to make available a larger portion of the drawing surface in the window frame.

PICK the CHANGE function from the Edit Menu. When the Change Submenu appears, PICK the VIEW function. The View Submenu appears below the Edit Menu. PICK the ZOOM OUT function. DR Draw reduces the grid and the design elements. The effect is similar to stepping back from the picture.

**CHANGE ELEMENT
SCALE**

To lengthen the pencil, you need to change the dimensions of the pencil body. PICK the CHANGE function from the Edit Menu. When the Change Submenu appears, PICK the SCALE function. Below the Edit Menu, DR Draw offers two options for changing element size, UNIFORM and NON-UNIFORM. UNIFORM changes the element size without changing the proportions of the element. NON-UNIFORM changes the element's proportions as well as its size.

Because you want to change the width of the bar but retain the height, PICK the NON-UNIFORM function. DR Draw prompts

PICK corner of new extent

Move the cursor to the grid point marking the upper left corner of the bar. If necessary, use the cursor speed key to slow the cursor. PICK the point. A pair of intersecting lines appears. DR Draw prompts

PICK opposite corner of new extent

Move the cursor to the grid point marking the lower right corner of the bar, then move 6 grid points to the right. PICK the point. Another pair of intersecting lines appears. The two pairs of lines show you how the pencil body will look after it is stretched. DR Draw now prompts

PICK moves second corner, DONE finishes

This prompt allows you to relocate the second point and define a different shape. In this case, because you are satisfied with the second point's location, press the DONE key. DR Draw erases the bar and redraws it in the new shape.

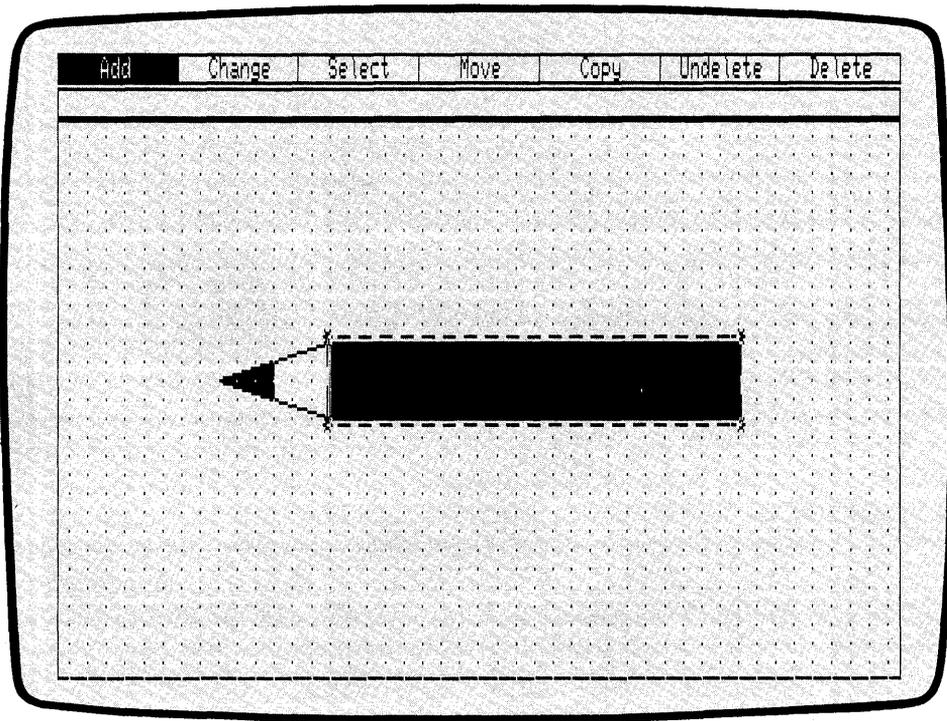


Figure 3-11. Redrawn Bar

ADD BORDER

Now ADD a decorative border to the picture. If your system has color capability, try changing the color of the new elements as you add them to the picture.

First, make the grid less dense. From the Edit Menu, PICK the CHANGE function. PICK the GRID function from the Change Submenu. When the Grid Submenu appears, PICK the SIZE 2X function. The current grid disappears and a new, less dense grid appears on the drawing surface.

Now use the BAR design element to draw part of the border. PICK the ADD function from the Edit Menu. From the Add Submenu, PICK the BAR design element. DR Draw prompts

PICK corner of bar

Move the cursor to the first grid point in the top row. See Figure 3-12. PICK the point.

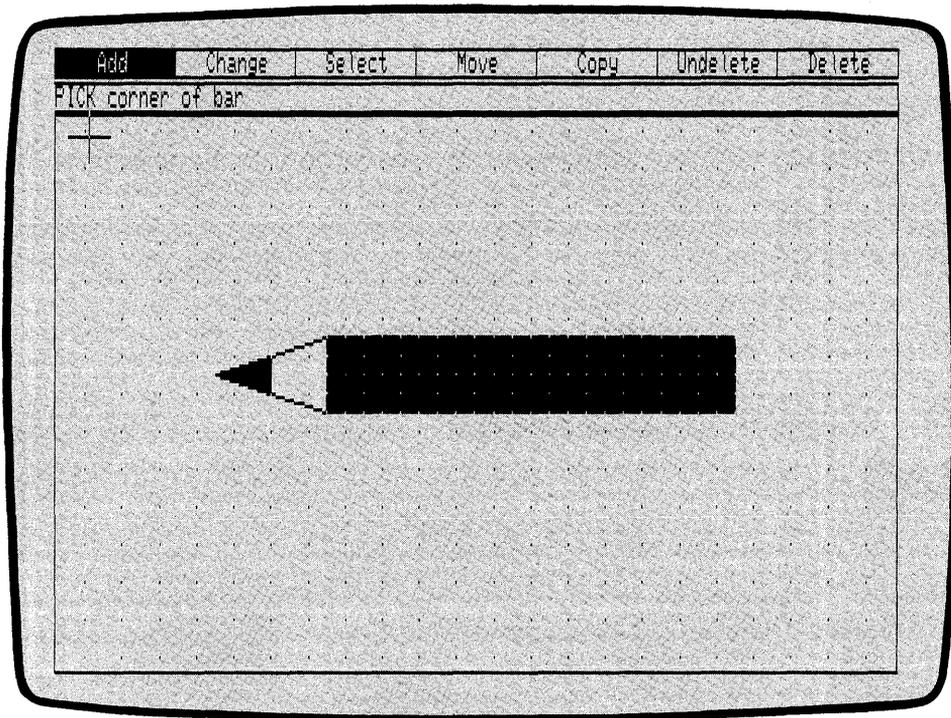


Figure 3-12. Cursor Position (Adding Border)

DR Draw displays another prompt

PICK opposite corner of bar

Move the cursor down 2 grid points, then 2 grid points to the right. PICK the point. A square bar appears.

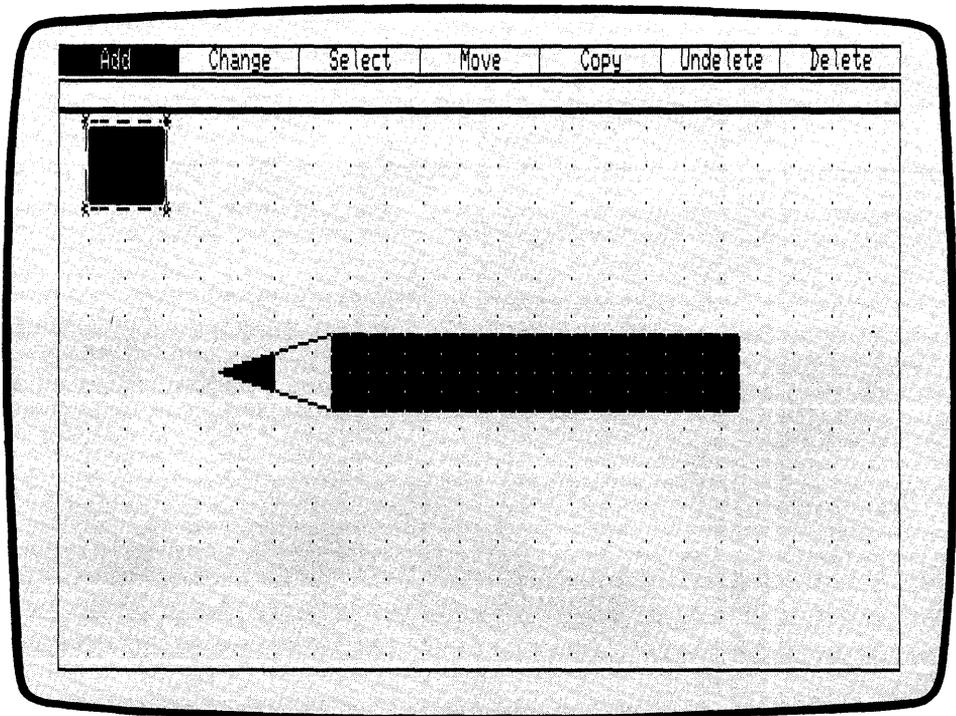


Figure 3-13. First Bar

Now add three more squares to the picture by PICKing the COPY function from the Edit Menu. DR Draw prompts

PICK reference point

Locate the cursor on the grid point that marks the lower right corner of the current element. PICK the point. DR Draw prompts

PICK location(s); Press DONE to finish

Starting from the point you PICKed, move the cursor straight down 11 grid points and PICK. A copy of the bar appears.

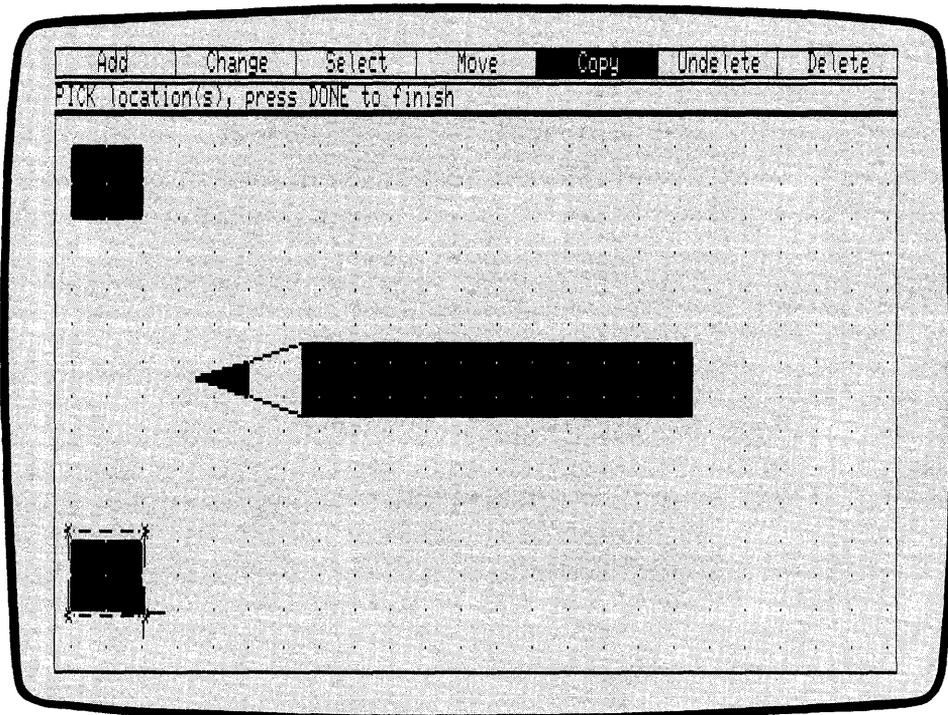


Figure 3-14. Second Bar

To add the final two bars shown in Figure 3-15, first move the cursor to the grid point on the right end of the same row. PICK again. A third bar appears.

Then move the cursor straight up the right edge of the window to the third row from the top. PICK this point. The last bar appears. Press the DONE key to finish copying.

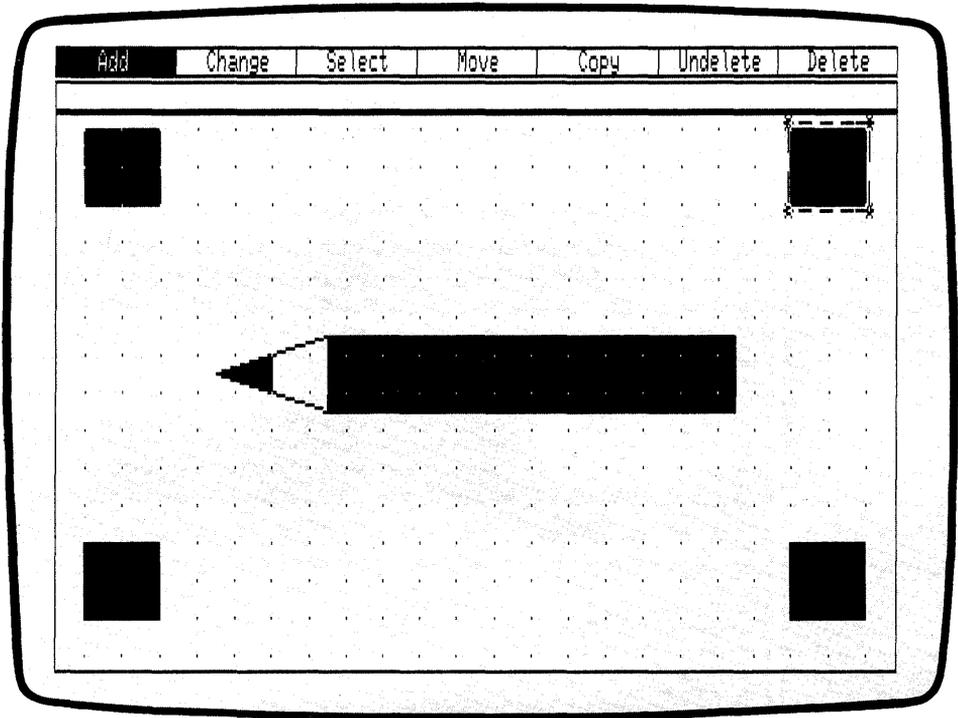


Figure 3-15. Four Corner Bars

Now use the LINES design element to complete the picture border. PICK the ADD function from the Edit Menu. When the Add Submenu appears, PICK the LINES design element. DR Draw prompts

PICK points; press DONE when finished

Add two rectangles to the border using the LINES design element. Look at Figure 3-16 for reference. PICK the upper right corner of the square at the top right of the window. To draw the border, do the following:

1. Move the cursor left to the upper left corner of the first square, and PICK.
2. Move the cursor down to the bottom left corner of the second square, and PICK.
3. Move the cursor right to the bottom right corner of the third square, and PICK.
4. Move the cursor up to the *bottom right* corner of the fourth square, and PICK.

Now move the cursor to the inside corners of each square, PICKing each point as you go, until you return to the fourth square. Press the DONE key when the two rectangles are complete.

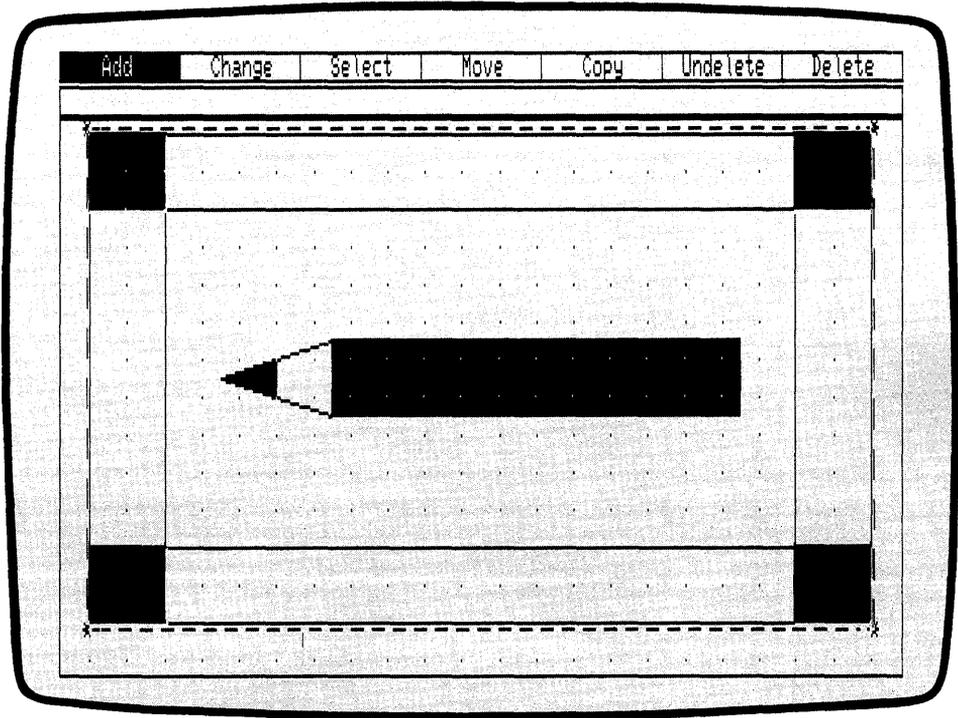


Figure 3-16. Complete Border

You have added a border to the pencil picture using some familiar functions. Now you use a new DR Draw function to add more design elements to the pencil.

ZOOM IN

The ZOOM IN function allows you to enlarge part of the drawing surface. With ZOOM IN, you can make detail changes in the picture or examine elements more closely. Here, you will ZOOM IN on the tapered part of the pencil between the point and the bar that makes up the pencil's main body.

PICK the CHANGE function from the Edit Menu. When the Change Submenu appears, PICK the VIEW function. From the View Submenu, PICK the ZOOM IN function. DR Draw prompts

PICK corner of window

DR Draw is asking you to define the part of the drawing surface you wish to fill the window. From the upper left corner of the *inner* border rectangle, move the cursor down 1 grid point and 1 grid point to the right. PICK the point. Two lines intersect at the point. DR Draw prompts

PICK opposite corner of window

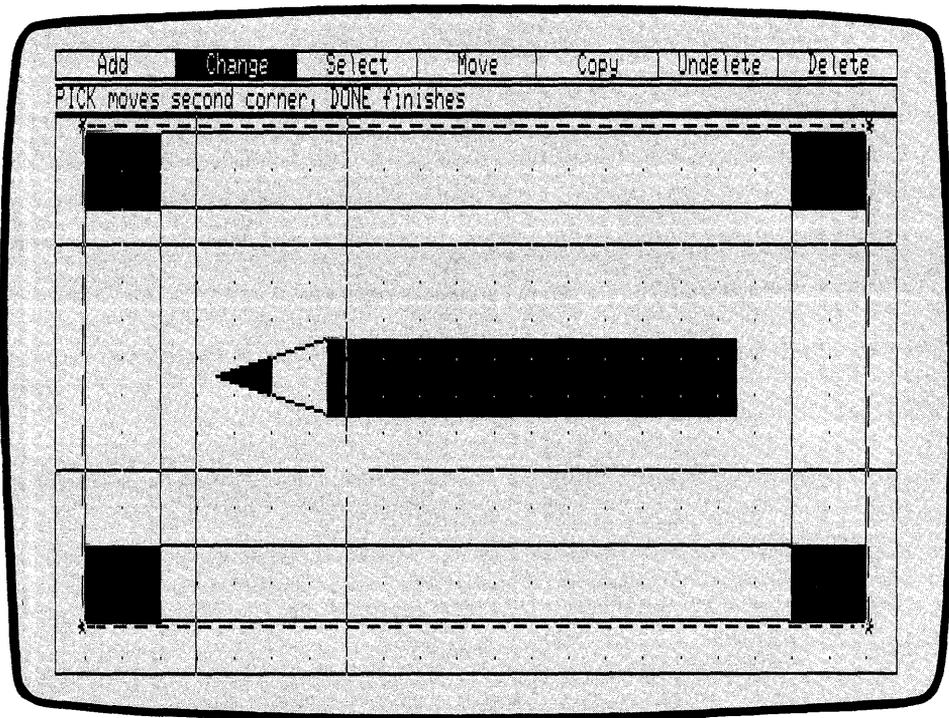


Figure 3-17. Pairs of Intersecting Lines (ZOOM IN)

Using the point where the lines intersect as a starting point, move the cursor down 6 grid points, then 4 grid points to the right. PICK the point. Another pair of intersecting lines appears on the screen, and DR Draw prompts

PICK moves second corner, DONE finishes

The rectangle defined by the two pairs of intersecting lines shows the area that will be enlarged to fill the new window frame. Press the DONE key.

DR Draw redraws the picture, and enlarges the part of the drawing surface you PICKed so that it fills the window frame. Notice that the grid points are now considerably farther apart on the drawing surface.

To work in detail you can make the grid more dense. PICK the CHANGE function from the Edit Menu. When the Change Submenu appears, PICK the GRID function.

From the Grid Submenu, PICK the SIZE 0.5X function. DR Draw replaces the current grid with a denser grid. The new grid is still not dense enough to perform the detailed work you will be doing. Repeat the steps above, and again PICK the SIZE 0.5X function from the Grid Submenu.

Figure 3-18 shows the drawing surface after you ZOOM IN and make the grid more dense. You are now ready to add some new elements to the pencil.

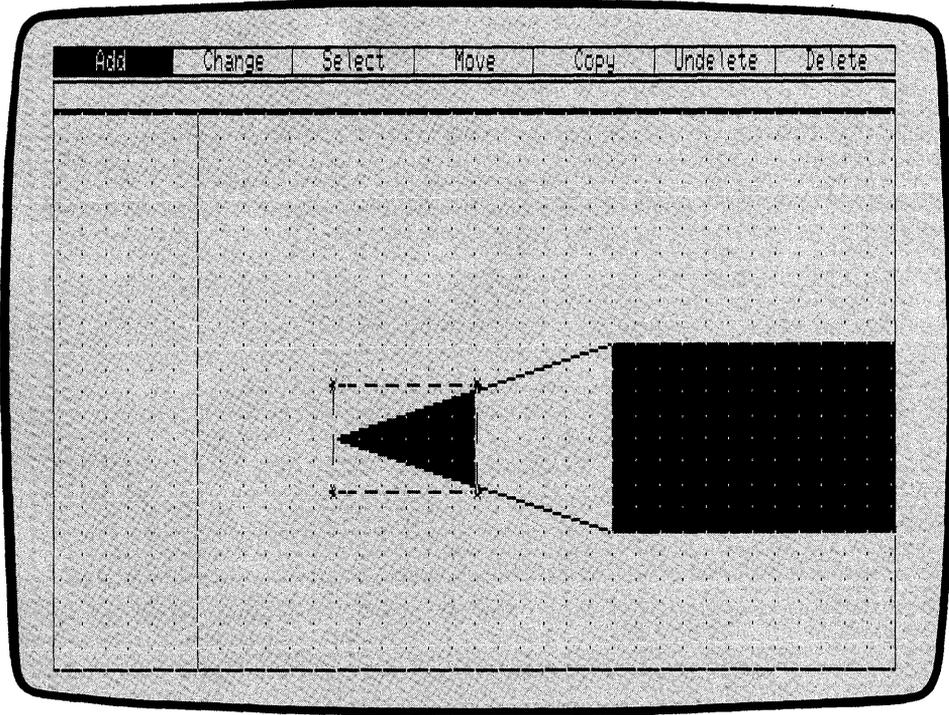


Figure 3-18. New Window Frame

ADD THREE ARCS

Now use the ARC design element to draw three arcs where the pencil body begins to taper down to the point. Use Figures 3-19a through 3-19d as a guide. Use FILLED arcs. If you need to review the ARC design element, refer to "Arcs" in Section 2, or to the description of the ARC design element in Section 6. Use the DELETE function if you make a mistake drawing any of the arcs.

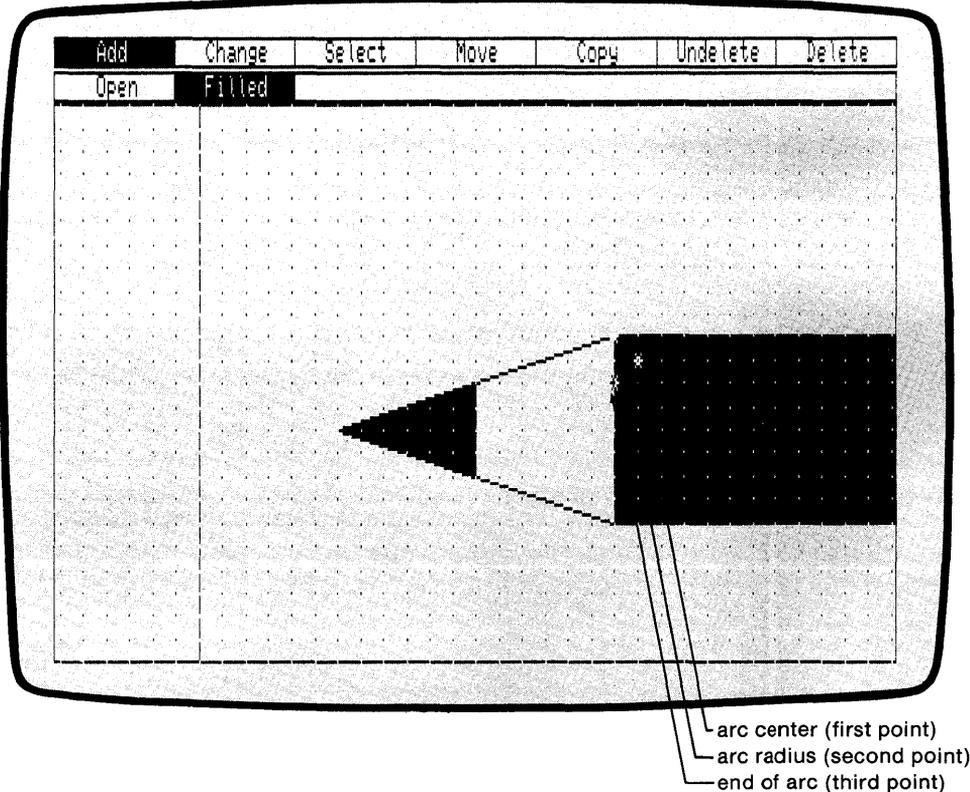


Figure 3-19a. First Arc

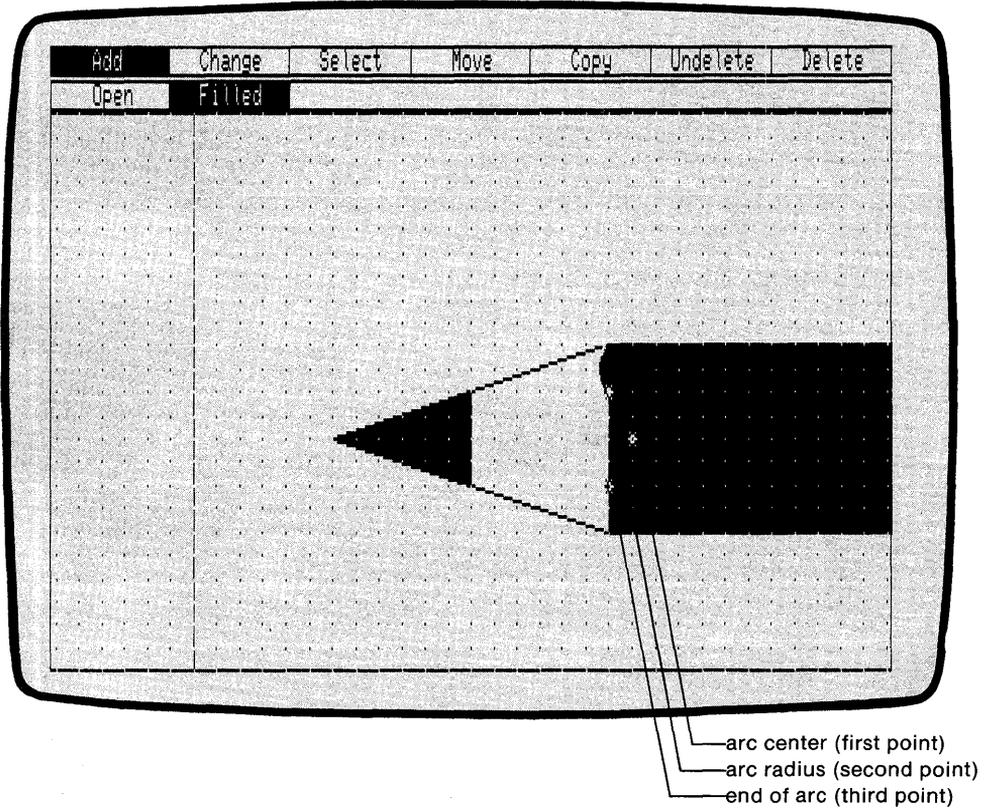


Figure 3-19b. Second Arc

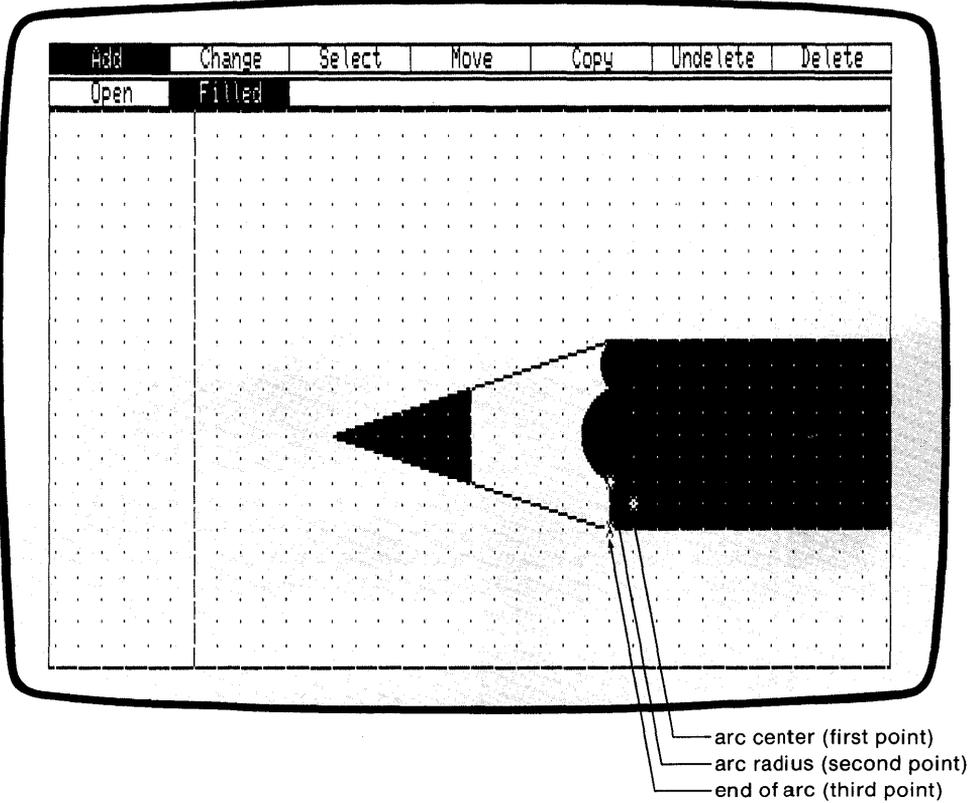


Figure 3-19c. Third Arc

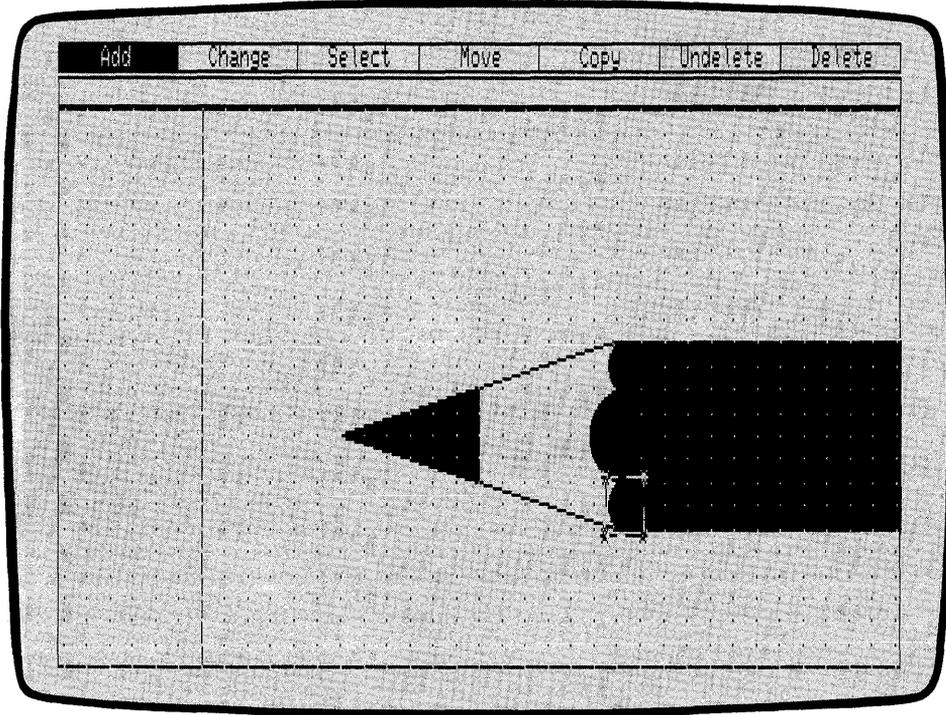


Figure 3-19d. Three Arcs

After you add the three arcs to the picture, you can look at the entire picture by using the ZOOM FULL function.

PICK the CHANGE function from the Edit Menu. When the Change Submenu appears, PICK the VIEW function. From View Submenu, PICK the ZOOM FULL function. DR Draw redraws the picture, fitting all the design elements into the window frame. Because the current layout is SCREEN, the default layout, the picture fills the entire window frame.

Notice that the grid is very dense. Before continuing, use the SIZE 2X function of the Grid Submenu to make the grid less dense.

**BACKGROUND
ELEMENT**

If you want to use a design element as a background for the pencil, the **ADD** and **VIEW** functions permit you to do this.

First, draw the background element. Use the **BAR** design element to draw a solid rectangle over the inner rectangle surrounding the pencil. **PICK** the upper right and lower left corners of the rectangle so the bar will have the same dimensions as the rectangle. The bar element appears in solid fill, blocking the pencil from view.

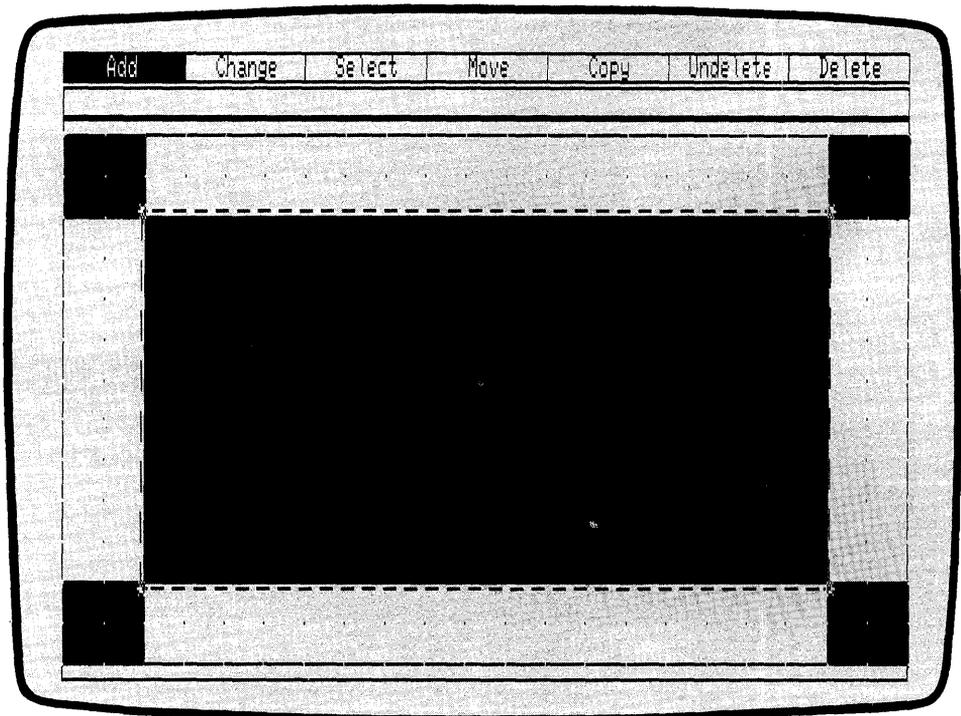


Figure 3-20. Bar Covers Pencil

CHANGE STYLE

The new bar has the same fill style as the pencil body. Next contrast the two elements by changing the fill style of the new bar.

PICK the CHANGE function from the Edit Menu. When the Change Submenu appears, PICK the STYLE function. The Style Submenu appears.

PICK the fourth style from the left. DR Draw fills the bar with the style fill pattern you have chosen and returns you to the Edit Menu.

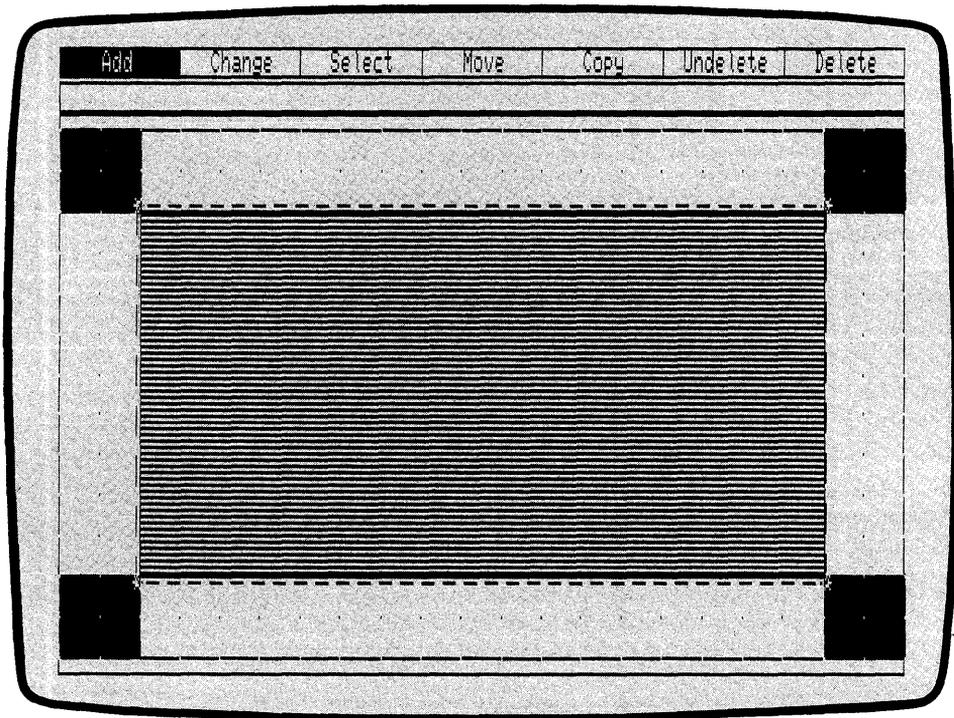


Figure 3-21. New Bar Style

PUT TO BACK

Now you can place the new bar behind the pencil.

PICK the CHANGE function from the Edit Menu. When the Change Submenu appears, PICK the VIEW function. PICK the PUT TO BACK function from the View Submenu.

When DR Draw redraws the picture, it places the current element, the new bar, on the drawing surface first, then draws the other design elements. The pencil is now visible, and the current element is in the background.

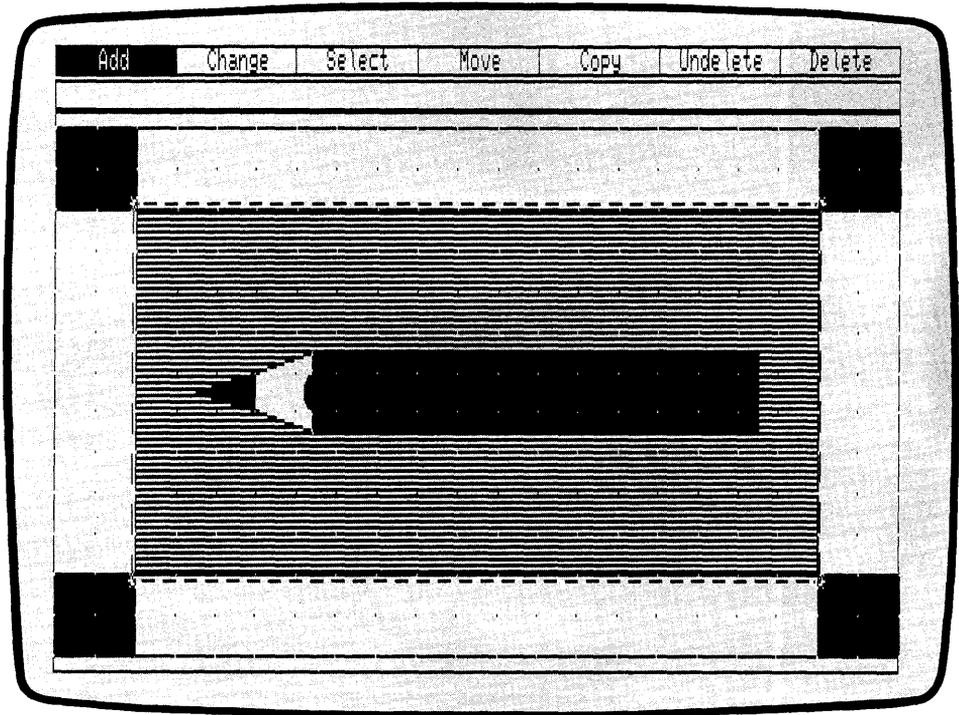


Figure 3-22. Bar Put To Back

ADD TITLE

To complete your picture, add a title to the report cover.

To begin, make some room for the title by using the ZOOM OUT function. PICK the CHANGE function from the Edit Menu. When the Edit Menu appears, PICK the VIEW function. From the View Submenu, PICK the ZOOM OUT function. DR Draw reduces the picture.

From the Edit Menu, PICK the ADD function. PICK the TEXT design element from the Add Submenu and type under the picture

MOUNTAIN PENCILS ANNUAL SALES

Using the CHANGE and STYLE function, PICK the Simplex submenu selection. The text appears in the font Simplex Roman. Use the MOVE function to center the title beneath the picture. See Figure 3-23. Your design is complete. If you want to change the layout of the picture, do so now before you save the picture.

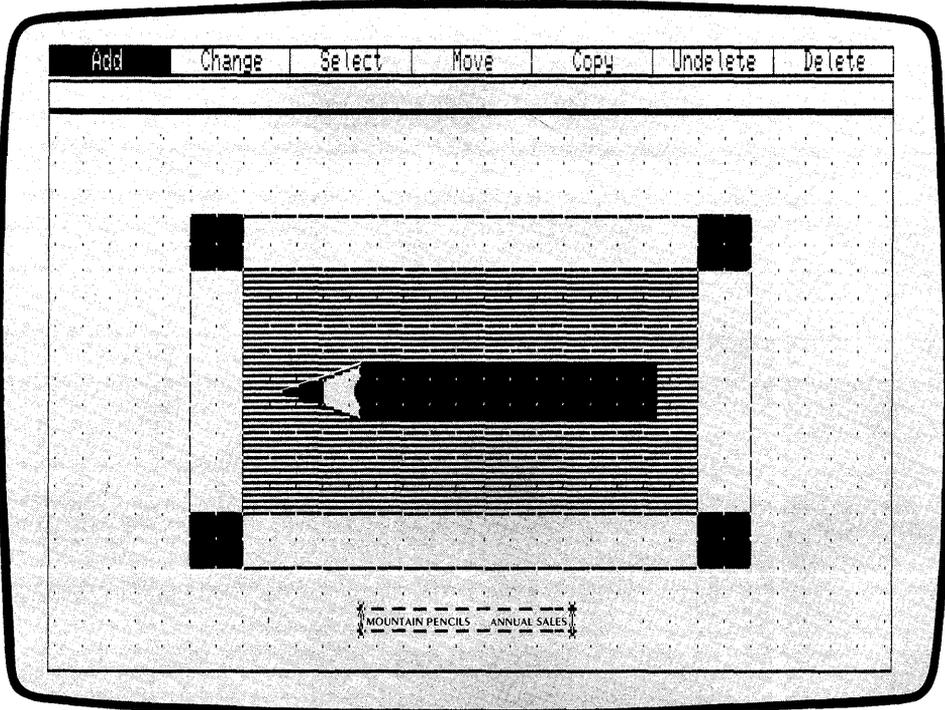


Figure 3-23. Complete Picture

SAVE THE DRAWING To save the picture file on the diskette, press the DONE key to return to the Main Menu. PICK the SAVE function from the Main Menu. DR Draw prompts

B:PENCIL? (or type new name)

Press the RETURN key, or type a new filename and press the RETURN key. In the first case, DR Draw displays the message

B:PENCIL: saving file

When the message disappears, DR Draw has saved the file on diskette. You can now use the OUTPUT function to display your drawing on the screen or to produce output on a printer, plotter, or camera. Otherwise, you can leave DR Draw by PICKing the EXIT function from the Main Menu. The operating system prompt appears to signal your return to the operating system.

Congratulations, you have completed the advanced tutorial and learned some sophisticated DR Draw functions in the process. These tutorials, together with Sections 4, 5, and 6, enable you to develop your skills further with DR Draw.

End of Section 3

Section 4

CONCEPTS

INTRODUCTION

By working through the tutorials in Sections 2 and 3, you learned the essentials of creating and editing pictures with DR Draw. This section describes the following DR Draw concepts:

- DR Draw menus
- the drawing surface
- cursors
- the current element
- style
- filenames
- active picture files
- picture file diskettes

DR Draw MENU

DR Draw's menus contain functions and design elements. The menus appear in two lines across the top of the display screen. The Main Menu and the Edit Menu appear at different times in the top line. Submenus, prompts, and messages appear in the second menu line; all are described later in this section.

Main Menu Functions

When you start a session in DR Draw, the Main Menu appears in the top menu line. The line below it is empty. The Main Menu contains seven functions.

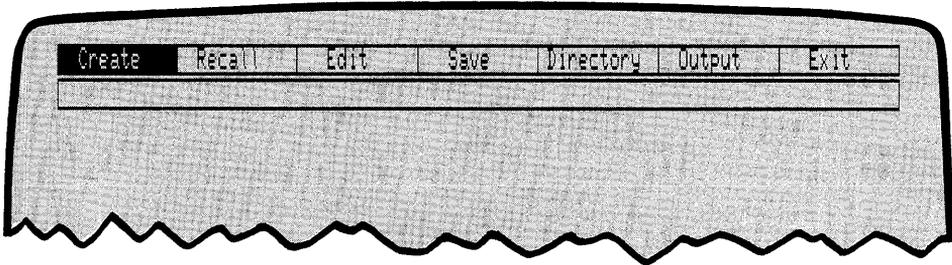


Figure 4-1. Main Menu Functions

Using the Main Menu functions, you can

- create a new picture file
- recall an existing picture file
- edit a picture file that you create or recall
- save a picture file
- display a directory of picture files
- produce output from a picture file
- exit DR Draw and return to the operating system

Section 5 describes all Main Menu functions.

Edit Menu

You must be in the EDIT function to draw a new picture or make changes to an existing picture file. When you PICK the CREATE or RECALL function and give a valid filename, you automatically pass to the EDIT function. Filenames are discussed in detail later in this section.

When you are in the EDIT function, the Edit Menu replaces the Main Menu in the first line. The line below it is empty. The Edit Menu contains the following seven functions.

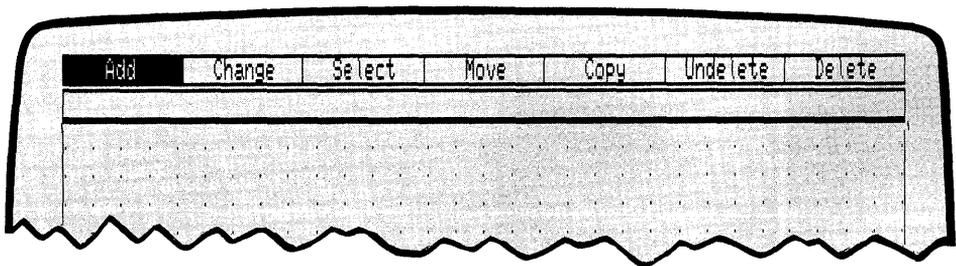


Figure 4-2. Edit Menu

With the Edit Menu functions, you can

- add design elements to a picture file
- change the characteristics of individual design elements or of the DR Draw environment
- select a new current element
- move a design element
- copy a design element
- undelete a deleted design element
- delete a design element

Section 5 describes all Edit Menu functions. Section 6 describes design elements, which you add by PICKING the ADD function.

Submenus

Two Main Menu functions, EDIT and OUTPUT, have submenus that appear on the second menu line. Contents of the submenus include functions, design elements, and other choices that supply DR Draw with necessary additional information.

For example, if you PICK the ADD function from the Edit Menu, you need to tell DR Draw which of the seven design elements to add. The Add Submenu lists the seven and allows you to PICK one of them.

Prompts and Messages

DR Draw uses prompts to give you instructions and to request information from you. Prompts appear in the second menu line in place of submenus.

Some prompts require that you type a response. The response appears on the second line immediately following the prompt.

In addition, DR Draw displays a variety of informational and error messages, most of which also appear on the second line.

Error Messages

DR Draw displays error messages when it encounters problems that prevent it from proceeding as requested. Error messages briefly describe the problem and give you instructions on what to do next.

In Section 5, the description of each function lists the error messages associated with the function and describes the cause of the error.

DRAWING SURFACE

The drawing surface is two-dimensional. It is visible inside a rectangle located just below the menu lines, as Figure 4-3 illustrates. The drawing surface is visible only when you are in the EDIT function; at other times that part of the screen is empty.

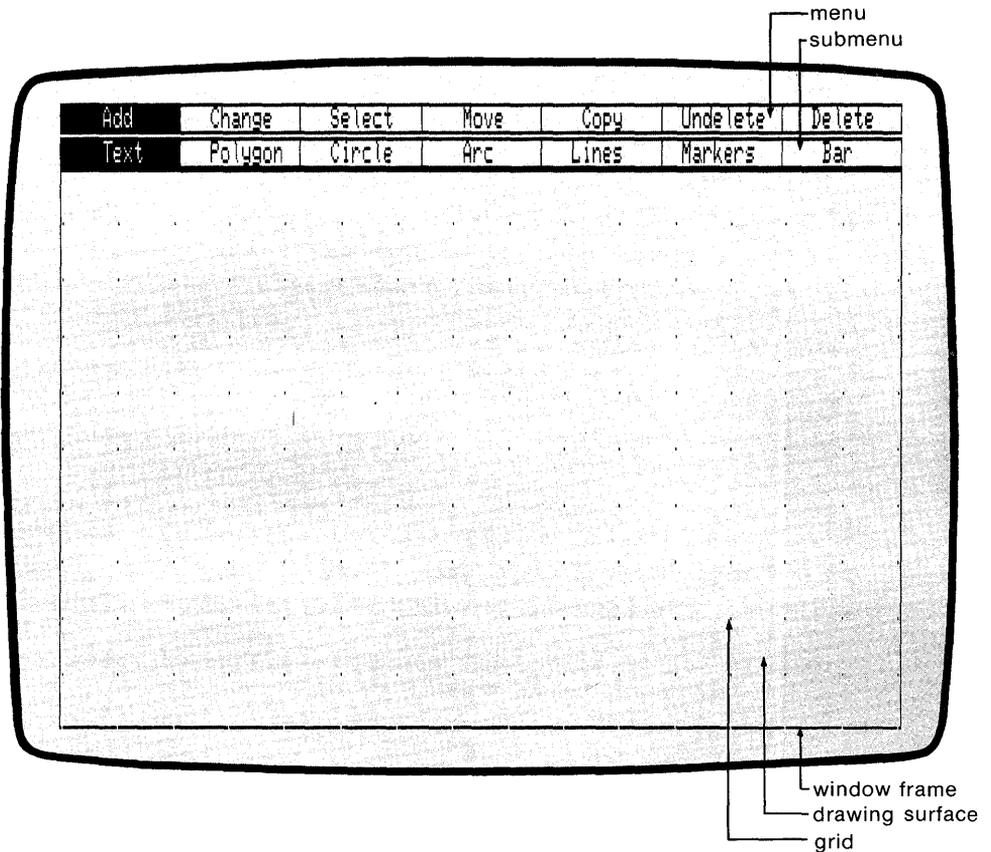


Figure 4-3. Drawing Surface

Window and Window Frame

The display screen acts as a window to the drawing surface; the rectangular outline is the window frame.

You control how much of the picture file is visible in the window frame. If design elements are outside the window frame, they are still part of the picture file, but they are not visible. With the VIEW function described in Section 5, you can

- move the window over the drawing surface to
 - look at other parts of your picture file
 - add or modify design elements
- zoom in on the drawing surface for a more detailed view
- zoom out for a broader view
- fit the entire picture file into an output layout

Grid and Snap

When you begin a new picture file, the drawing surface is filled with a grid of evenly spaced points that help you locate and align design elements.

To help you locate design elements, DR Draw automatically snaps to the nearest grid point when you PICK a point on the drawing surface.

The GRID function, described in Section 5, allows you to turn the grid and snap off when you do not wish to use the points for alignment.

CURSORS

Cursors mark your position in the menus and on the drawing surface. DR Draw uses three cursors: a menu cursor, a graphics cursor, and a text cursor.

Menu Cursor

The menu cursor marks your position on one of the menu lines. To PICK a function or design element, move the menu cursor to the correct position and press the PICK key.

The menu cursor can be a reverse video bar or a cross hair (+), depending on your computer.

Reverse video describes the appearance of characters against the display's background color. For example, a screen that ordinarily shows light characters on a dark background indicates the cursor's position in reverse video by showing dark characters on a light background.

You do not have to place the cross hair directly on top of the menu. To PICK a function or design element, you can locate the cursor on or below your choice and press the PICK key.

The menu cursor's operation varies from keyboard to mouse. Table 4-1 outlines these differences.

Table 4-1. Menu Cursor

<i>Input Device</i>	<i>Cursor Movement</i>		<i>PICK</i>	<i>DONE</i>
	<i>Left-Right</i>	<i>Right-Left</i>		
keyboard	TAB	BACKSPACE	SPACE BAR	RETURN
mouse	mouse movement		PICK key	DONE key

Menu Cursor: Wrapping	<p>In keyboard operation, the reverse video bar cursor wraps in both directions. Wrap means that if you advance the cursor past one end of the menu, it reappears at the other end of the menu.</p> <p>For example, if you press the TAB key when the Edit Menu cursor is on the DELETE function, the cursor appears on the ADD function. Similarly, if you press the BACKSPACE key when the cursor is on the ADD function, the cursor appears on the DELETE function.</p>
Graphics Cursor	<p>The graphics cursor appears after you PICK any of the Edit Menu functions but DELETE or UNDELETE. The graphics cursor is a cross hair; its center marks your position on the drawing surface.</p>
Graphics Cursor: Range of Motion	<p>The graphics cursor can move anywhere on the drawing surface inside the window, but you cannot move the cursor beyond the window frame.</p>
Graphics Cursor: Mouse	<p>If you use a mouse to move the graphics cursor, the cursor echoes the mouse's movement. If you need further information on the mouse, consult the documentation supplied with it.</p>
Graphics Cursor: Keyboard	<p>With a keyboard, you use the four arrow keys to move the graphics cursor up and down and left and right. To move the cursor diagonally, you combine vertical and horizontal cursor movements. To move the cursor continuously, hold down the arrow key that is moving the cursor.</p>

**Graphics Cursor:
Speed and Distance**

You can move the cursor rapidly or slowly. The fast speed corresponds to a large cursor movement each time you press the arrow key; the slow speed corresponds to a short movement. One of the keys on your keyboard allows you to reduce the cursor's speed and distance. The same key allows you to return the cursor to its original speed and distance. The key is identified in the *Supplement* or the documentation that accompanied your computer system.

Text Cursor

The text cursor marks the location of characters you type from the keyboard. The cursor is an underscore. You see the text cursor at two different times during a DR Draw work session.

1. When you PICK the TEXT design element from the Add Submenu and then PICK a point for entering text, the text cursor appears on the drawing surface. Section 6 describes the TEXT design element.
 2. When a prompt requires that you type a response, the text cursor appears on the second menu line immediately following the prompt.
-

CURRENT ELEMENT

To draw pictures with DR Draw, you PICK design elements from the Add Submenu. One design element in the picture file is called the current element. The current element is defined as one of the following:

- the most recently added element in a picture file you are working on
- the first-drawn element when you recall a picture file
- an element that you explicitly select as the current element

The MOVE, COPY, and DELETE functions, as well as several of the CHANGE functions, affect only the current element.

Extent

The current element is surrounded by a rectangular dashed line called the extent. Figure 4-4 shows you the current element and the extent.

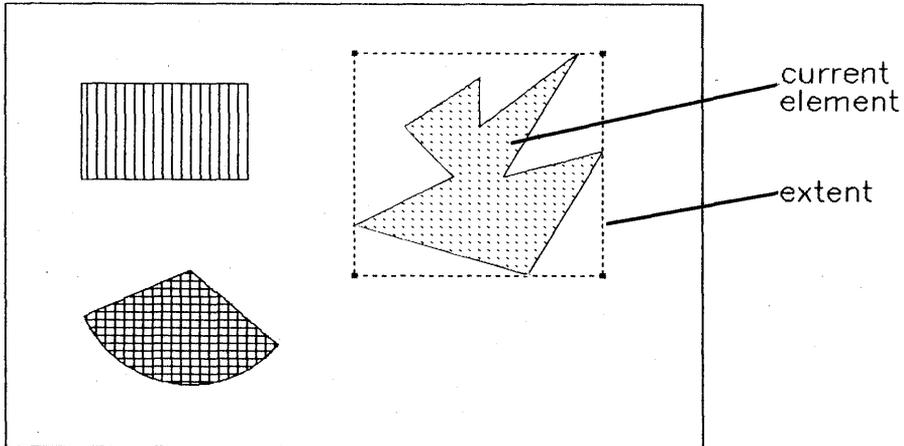


Figure 4-4. Current Element and Extent

Shared Extents

If two or more elements share the same extent (for example, a circle inscribed in a square), the first-drawn element is the current element whenever you select the shared extent.

For more information on selecting a current element, see the SELECT function in Section 5.

STYLE

A design element can have one of four style attributes:

- type style
 - line style
 - fill pattern
 - marker style
-

Initial Style

The style that DR Draw assigns to each design element when you create a new picture file or recall an existing one is called its initial style. Table 4-2 lists the attributes and initial styles for each design element.

Table 4-2. Initial Styles

<i>Design Element</i>	<i>Attribute</i>	<i>Initial Style</i>
TEXT	type style	machine font
POLYGON	fill pattern	solid fill
OPEN CIRCLE	line style	solid line
FILLED CIRCLE	fill pattern	solid fill
OPEN ARC	line style	solid line
FILLED ARC	fill pattern	solid fill
LINES	line style	solid line
BAR	fill pattern	solid fill

Changing Style

Using the STYLE function described in Section 5, you can change a design element's style. For example, you can change machine font text to one of three other fonts, and you can change the solid line of an open arc to one of several other line styles.

Current Style

When you change an element's style, you establish a current style that replaces the initial style. From that point on, all elements that share the attribute of the element you changed appear in the current style. For example, if you change the fill in a bar, the new fill pattern appears in all subsequent bars, and also in polygons, filled circles, and filled arcs.

The current style

- only affects elements in your current picture file
- does not affect any elements added before you changed style
- remains in effect until the next time you change style or until you save the file

When you save or recall a file, DR Draw resets the style to the initial style. Elements already in the picture file are not changed, but all new elements appear in their initial styles until you change the style.

Open and Filled Design Elements

An open design element consists of straight or curved lines. The space enclosed by the lines has nothing in it.

A filled design element consists of straight or curved lines with a pattern inside. Fill patterns include solid fill, cross hatching, and the hollow fill described below.

You can make CIRCLE and ARC design elements either OPEN or FILLED when you draw them. POLYGON and BAR design elements are always filled. Shapes drawn with LINES are always open.

Hollow Fill

The hollow fill pattern produces an element that looks like an open element. You see the difference when you overlay elements.

When you draw an open element on top of another element, you can see the element underneath. If you do the same with a hollow-filled element, the hollow fill masks the element it overlaps. Figure 4-5 illustrates the difference between an open element and one with hollow fill.

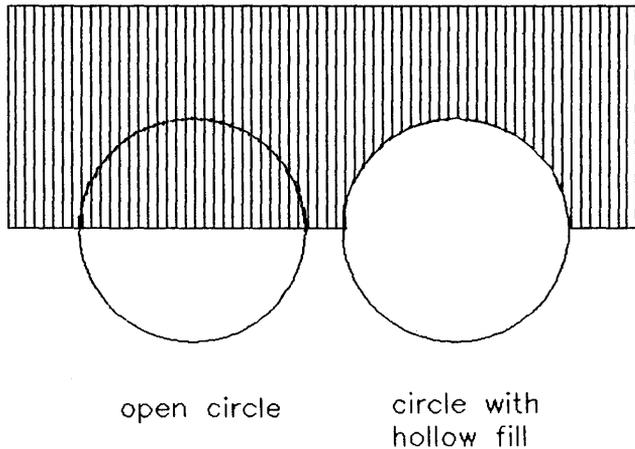


Figure 4-5. Hollow Fill

FILENAMES

When you PICK the CREATE, OUTPUT, RECALL, and SAVE functions, DR Draw asks you to supply a filename. Filenames identify picture files for you, DR Draw, and the operating system. The filename you select must be unique; you cannot have two picture files with the same filename on the same diskette.

The filename can be any combination of letters and numbers that does not exceed eight characters. DR Draw ignores anything after the eighth character. The alphabetic characters can be uppercase, lowercase, or both.

Illegal Characters

Do not use the following characters in a filename:

< > = , ! | * ? & / \$ [] () . : ; + -

Some operating systems and applications reserve these characters for special purposes.

In addition, do not use spaces in filenames. DR Draw ignores spaces.

Filetype

After you supply the filename, DR Draw adds a .PIX filetype. For example, the filename CHART becomes CHART.PIX. The filetype identifies the file as a DR Draw picture file. Do not give a .PIX filetype to a file that you did not create with DR Draw.

If you include a period as part of the filename, as in the example in Table 4-3, DR Draw treats the period and any subsequent characters as an invalid filetype. DR Draw discards the invalid filetype and supplies .PIX in its place.

Table 4-3. Filenames

<i>Filename Typed</i>	<i>Filename Used</i>	<i>Explanation</i>
flow	flow.pix	valid as given
orgchart	orgchart.pix	valid as given
organization	organiza.pix	too many characters
org.plan	org.pix	period in filename

For additional information on specifying filenames, consult your operating system manual.

ACTIVE PICTURE FILES

The picture file you are working on in the EDIT function is called your active picture file; it is like a sheet of drawing paper you spread on your desk or table.

Created and Recalled Files

If you create a new picture file, the active file is the only existing version of your picture file; no previous version is stored on diskette.

If you recall an existing picture file, the active file is a copy of the file you recalled. The original version remains on diskette until you replace it by saving the active file under the same name.

For more information, see the descriptions of the CREATE, RECALL, and SAVE functions in Section 5.

Abandoning an Active File

If you PICK the CREATE, RECALL, OUTPUT, or EXIT function without saving your active picture file, DR Draw displays the prompt

Abandon active picture file? (Y/N)

An N (No) response returns you to the Main Menu and allows you to save the file. A Y (Yes) response abandons your active picture file, which is like tearing up the sheet of drawing paper and discarding the pieces in the wastebasket. You no longer have an active file.

**PICTURE FILE
DISKETTES**

Unless you specify otherwise, DR Draw saves picture files on the same diskette that contains DR Draw. You can, however, save your picture files on a separate diskette to give you more room for file storage and to make it easier for you to identify your DR Draw picture files.

**Disk Drive
Identifier**

The disk drive identifier, a letter from A to P followed by a colon, identifies the drive in which your diskette is located.

If you use a separate picture file diskette, you must identify the drive when you give a picture filename. For example, if DR Draw is on the diskette in drive A and you want a file called FLORPLAN on the diskette in drive B, type

B:FLORPLAN

to any DR Draw prompt that requests a filename.

**Disk Drive
Identifier in
Messages**

When you specify a separate picture file diskette, DR Draw includes the disk drive identifier in messages. For example, if you use the SAVE function to save the file called FLORPLAN on the diskette in drive B, DR Draw displays the message

B:FLORPLAN: saving file

End of Section 4

Section 5

FUNCTIONS

INTRODUCTION

This section describes in alphabetical order the functions contained in the Main Menu, Edit Menu, and Change Submenu. Section 6 describes the design elements contained in the Add Submenu.

The Main and Edit Menus are illustrated at the beginning of Section 4. The Main Menu contains seven functions:

- CREATE
- DIRECTORY
- EDIT
- EXIT
- OUTPUT
- RECALL
- SAVE

The Edit Menu also contains seven functions:

- ADD
- CHANGE
- COPY
- DELETE
- MOVE
- SELECT
- UNDELETE

Change Submenu When you PICK the CHANGE function from the Edit Menu, the Change Submenu appears on the second line. The Change Submenu contains seven functions.

- COLOR
- GRID
- LAYOUT
- REDRAW
- SCALE
- STYLE
- VIEW

Prompts After you PICK a function, DR Draw in many cases displays prompts that ask for needed information or that instruct you how to proceed.

When a function has two or more prompts, you respond to one prompt before DR Draw displays the next. The descriptions of the functions reflect this sequence by following the text of each prompt with a description of how you respond.

Error Messages As outlined in Section 4, DR Draw displays error messages when it encounters problems that prevent it from proceeding as requested.

In several cases functions have two or more error messages associated with them. In that case, the description of the function gives each error message, its cause, and your response.

ADD

Purpose The ADD function lets you PICK design elements to add to your picture file.

Add Submenu When you PICK the ADD function from the Edit Menu, the Add Submenu appears on the second menu line, as Figure 5-1 illustrates. If your menu cursor is a reverse video bar, it appears on the second menu line. If your menu cursor is a cross hair, it appears on the drawing surface. Section 4 describes menu cursors.

The Add Submenu contains seven design elements, which are described in Section 6.

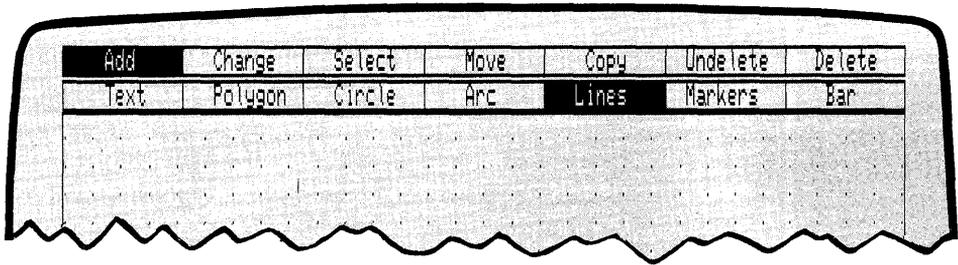


Figure 5-1. Edit Menu and Add Submenu

CHANGE

Purpose

The CHANGE function lets you change

- the style of design elements
- the view of the picture file in the window
- the scale (size and/or proportions) of design elements
- the layout used for output
- the color of design elements
- the grid's characteristics

and redraw the active picture file.

When you PICK the CHANGE function from the Edit Menu, the Change Submenu appears on the second menu line, as Figure 5-2 illustrates. If your menu cursor is a reverse video bar, it appears on the second menu line. If your menu cursor is a cross hair, it appears on the drawing surface. Section 4 describes menu cursors.

The Change Submenu contains seven functions. Descriptions of these appear alphabetically in this section.

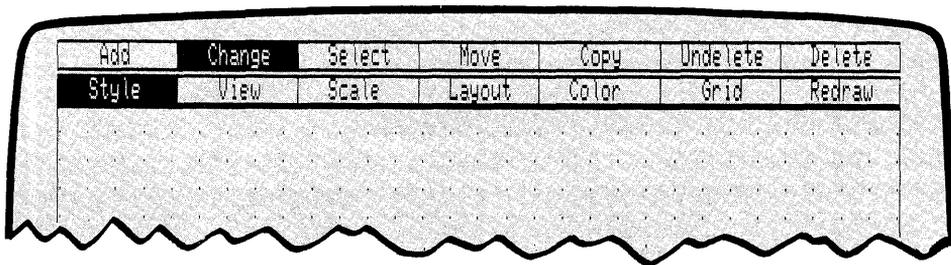


Figure 5-2. Change Submenu

COLOR

Purpose

The COLOR function lets you change the color of the current element.

When you PICK the COLOR function from the Change Submenu, the Color Submenu replaces the Change Submenu on the second line. The Color Submenu lists eight colors, in rectangles numbered 0 through 7. If your menu cursor is a reverse video bar, a small rectangle marks your position on the Color Submenu. If your menu cursor is a cross hair, it appears on the drawing surface. Section 4 describes menu cursors.

The appearance of the Color Submenu depends on the display you have. On color display monitors, the menu rectangles appear in the color represented by the number. For example, if color number 2 is red, the number 2 rectangle has a red fill in addition to the number.

Sample Color File

Some color monitors, printers, and plotters do not support all eight colors. To learn which colors are represented by the numbers on the menu, create a picture file with eight bars. Number the bars from 0 to 7, and change the color of each one to the corresponding color. You can save and print the file for quick reference.

COPY

Purpose	The COPY function copies the current element to locations you choose on the drawing surface.
Prompts	<p>When you PICK the COPY function, DR Draw displays two prompts in the sequence below.</p> <p>PICK reference point</p> <p>PICK a reference point on or near the extent. Reference points are described below.</p> <p>In many cases a corner of the extent is the easiest point to use as a reference point.</p> <p>PICK location(s); Press DONE to finish</p> <p>Move the cursor to the reference point's new location and press the PICK key. DR Draw copies the element to the new location. Each additional PICK copies the element to another location. Each new copy of the element becomes the current element. Press the DONE key to return to the Edit Menu.</p>
Reference Points	<p>The COPY function divides the extent into nine invisible sectors, as Figure 5-3 illustrates. All except the middle sector (number 5) extend infinitely beyond the extent.</p> <p>A design element has nine reference points, which are marked in Figure 5-3: the corners of the extent, the midpoint of each side of the extent, and the center of the extent. If, for example, you PICK a point anywhere in sector number 4, DR Draw uses the midpoint of the left side of the extent as the reference point.</p>

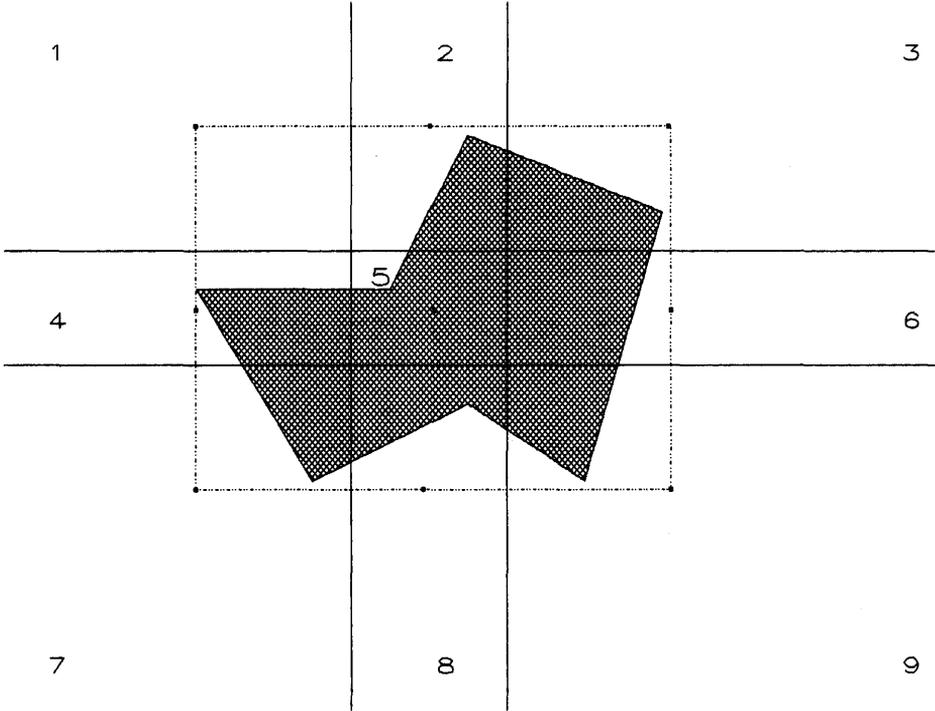


Figure 5-3. Reference Points

CREATE

Purpose	<p>The CREATE function permits you to begin a new picture file. DR Draw opens an active picture file under the name you supply.</p> <p>PICKing the CREATE function is like the following:</p> <ul style="list-style-type: none">■ going to the cabinet where you store your drawings■ making a space for the new drawing by writing a filename on an empty folder■ returning to your drawing table■ setting a fresh sheet of drawing paper in front of you
Prompt	<p>DR Draw displays the following prompt when you PICK the CREATE function.</p> <pre>Picture filename?</pre> <p>When you give a filename, DR Draw checks your directory to be sure that filename does not already exist with a .PIX filetype. If the file is not found, DR Draw automatically places you in the EDIT function, and you can start drawing.</p>
Error Messages	<p>You can receive one of two error messages when you PICK the CREATE function. One error message is</p> <pre>CHART: already exists, Press DONE</pre> <p>You gave a filename (in this case, CHART) that is already in your directory with a .PIX filetype. Press the DONE key to return to the Main Menu. To begin a new picture file, PICK the CREATE function again and give a new filename.</p>

The other error message is

Abandon active picture file? (Y/N)

You PICKed the CREATE function without saving your active picture file. DR Draw displays this error message instead of the prompt.

If you respond Y (Yes), DR Draw abandons the active picture file and prompts

Picture filename?

Section 4 discusses abandoning an active picture file.

If you respond N (No), DR Draw returns you to the Main Menu. To continue working on your active picture file, PICK the EDIT function. To save the active file, PICK the SAVE function.

DELETE

Purpose	The DELETE function removes the current element from your picture file.
Design Element Order	<p>You delete design elements strictly by the order in which you added them, starting with the current element and working backwards in sequence until you reach the first element in the picture file. If design elements remain after the first-drawn element is deleted, DELETE works forward in sequence.</p> <p>Each time you delete an element, the next element in the sequence becomes the current element.</p> <p>The five design elements in Figure 5-4 were added to the file in the order indicated by the numbers. If you start with the star as the current element, DELETE works in the sequence 5-4-3-2-1.</p> <p>However, if you start with the arc as current element, the sequence is 3-2-1-4-5.</p> <p>You can delete an element that is not inside the window frame. For example, in Figure 5-4, if you ZOOM IN until only the bar is visible, you can still delete the star, arc, circle, and square.</p>
Overlapping Elements	Deleting an element that overlaps another also removes from the drawing surface (but does not delete) some or all of the element underneath. For example, when you delete the circle in Figure 5-4, a circular hole appears in the square.
The Grid	<p>In addition, if you delete any element from the drawing surface when the grid is on, the grid points under the element are also deleted.</p> <p>To restore the missing parts of an element or missing grid points, use the REDRAW function described later in this section.</p>

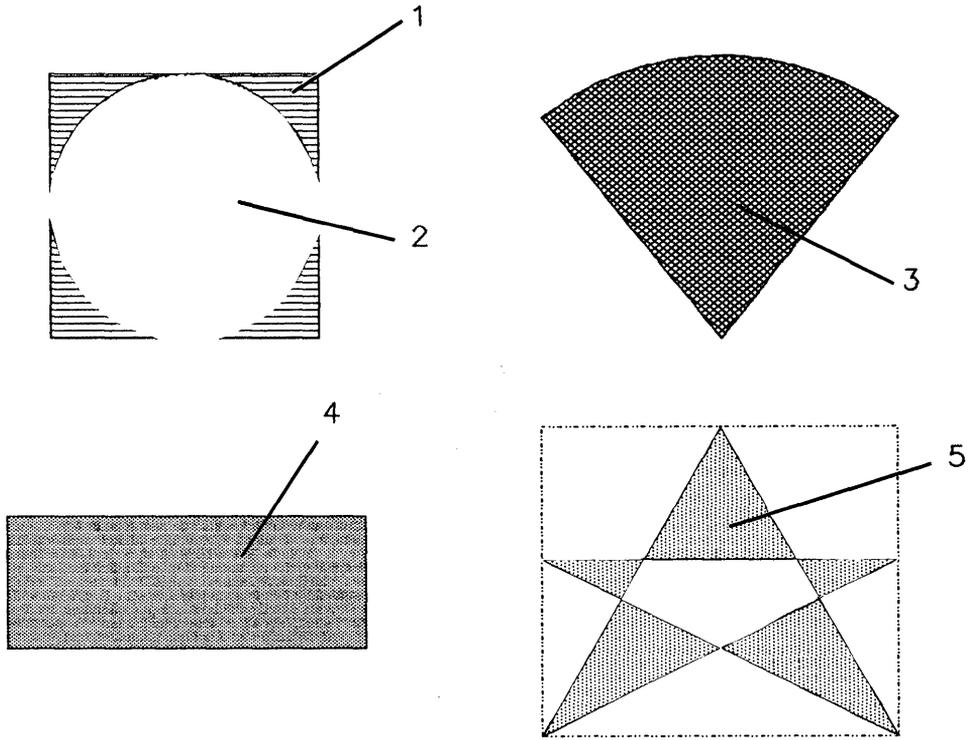


Figure 5-4. Deleting Elements

DIRECTORY

Purpose	<p>The DIRECTORY function lists all files with a .PIX filetype on the diskette in a drive you specify.</p> <p>While you are using the EDIT function, you can look at the directory without affecting work in progress.</p>
Prompts	<p>When you PICK the DIRECTORY function, DR Draw displays the following prompt.</p> <p style="padding-left: 20px;">On which drive?</p> <p>Give the disk drive's identifier, a letter from A to P. As soon as DR Draw displays the directory, the Main Menu reappears. The directory display remains on the screen until you do one of the following:</p> <ul style="list-style-type: none"> ■ PICK the CREATE, RECALL, or OUTPUT function and give a valid filename ■ PICK the EDIT function to return to an active picture file ■ PICK the SAVE function to save an active picture file ■ PICK the DIRECTORY or EXIT function <p>If you do not give a drive identifier in response to the DIRECTORY prompt, DR Draw returns you to the Main Menu.</p>
Error Message	<p>You can receive the following error message when you PICK the DIRECTORY function.</p> <p style="padding-left: 20px;">No PIX files on disk, press DONE</p> <p>No .PIX files are on the drive specified. Press the DONE key to return to the Main Menu.</p>

EDIT

Purpose

The EDIT function lets you draw, update, and modify picture files.

When you PICK the CREATE or RECALL function and give a correct filename, DR Draw automatically places you in the EDIT function.

If you return to the Main Menu while editing a picture file, you can PICK the EDIT function to resume work on your active file. There are two common reasons for returning to the Main Menu in the middle of working on a picture file:

- You wanted to check the directory.
- You accidentally pressed the DONE key.

Edit Menu

The Edit Menu replaces the Main Menu on the first menu line. The Edit Menu lists the seven functions shown in Figure 5-5.

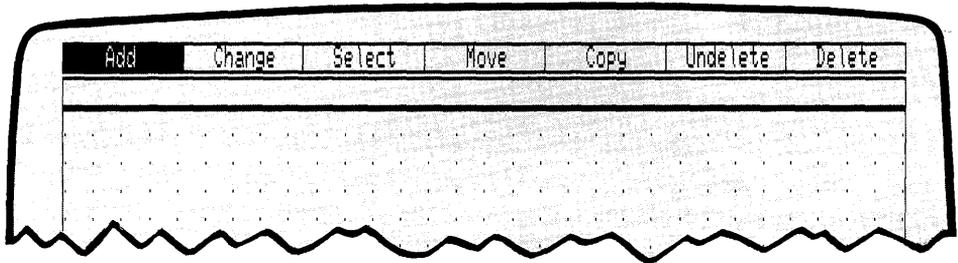


Figure 5-5. Edit Menu

Error Message

You can receive the following error message when you PICK the EDIT function.

```
No active picture file, Press DONE
```

You PICKed the EDIT function, but you do not have an active picture file. Press the DONE key to return to the Main Menu.

EXIT

Purpose	The EXIT function lets you leave DR Draw and return to the operating system.
Error Message	<p>You can receive the following error message when you PICK the EXIT function.</p> <pre>Abandon active picture file? (Y/N)</pre> <p>You PICKed the EXIT function without saving your active picture file.</p> <p>If you respond Y (Yes), DR Draw abandons the active picture file and returns you to the operating system prompt. Section 4 discusses abandoning an active picture file.</p> <p>If you respond N (No), DR Draw returns you to the Main Menu. To continue working on your active picture file, PICK the EDIT function. To save the active file, PICK the SAVE function.</p>

GRID

Purpose The GRID function allows you to change the appearance or function of the drawing grid.

When you PICK the GRID function from the Change Submenu, the Grid Submenu replaces the Change Submenu on the second line. If your menu cursor is a reverse video bar, it remains on the second menu line. If your menu cursor is a cross hair, it appears on the drawing surface. Section 4 discusses menu cursors.

Depending on the status of GRID and SNAP, three different Grid Submenus can appear. In its initial state, the Grid Submenu has four functions.

Grid	Size 2X	Size 0.5X	Snap Off
------	---------	-----------	----------

Figure 5-6a. Grid Submenu — GRID On and SNAP On

GRID OFF When you PICK the GRID function with the grid visible, DR Draw turns off the grid, which removes the points from the drawing surface. At the same time, DR Draw automatically turns off the snap.

SIZE 2X When you PICK the SIZE 2X function, DR Draw redraws the grid with the points twice as far apart as in the present grid; the grid becomes half as dense. SIZE 2X does not affect the size of elements in your picture file.

Message You can receive the following message when you PICK the SIZE 2X function.

```
Cannot show grid, press DONE
```

Using the SIZE 2X function, you made the grid points so far apart that DR Draw turns the grid off and reports its status to you. You have not made an error; you can leave the grid off if you want.

You can make the grid more dense with the SIZE 0.5X, ZOOM OUT, or ZOOM FULL functions. However, if you use one of the ZOOM functions, you must PICK the GRID function to make the grid visible again.

SIZE 0.5X

When you PICK the SIZE 0.5X function, DR Draw re-draws the grid with the points half as far apart as in the present grid; the grid becomes twice as dense. SIZE 0.5X does not affect the size of elements in your picture file.

Message

You can receive the following message when you PICK the SIZE 0.5X function.

`Cannot show grid, Press DONE`

Using the SIZE 0.5X function, you made the grid too dense to be visible as individual points. DR Draw turns the grid off and reports its status to you. You have not made an error; you can leave the grid off if you want.

You can make the grid less dense with the SIZE 2X and ZOOM IN functions. However, if you use the ZOOM IN function, you must PICK the GRID function to make the grid visible again.

SNAP OFF

When you PICK the SNAP OFF function, DR Draw turns the grid snap off. For more details on SNAP, refer to Section 4.

When the snap is off, you can PICK the cursor's exact location on the drawing surface. The cursor does not snap to the nearest grid point.

Second Submenu

The Grid Submenu changes according to the current status of GRID and SNAP.

You see the following submenu after you turn off the grid.

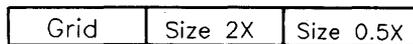


Figure 5-6b. Grid Submenu — GRID Off and SNAP Off

GRID ON

When you PICK the GRID function with the grid not visible, DR Draw turns the grid on and restores the points to the drawing surface.

Because DR Draw automatically turned off the snap when you turned off the grid, no SNAP function appears on this submenu. You cannot turn the snap on when the grid is off.

Third Submenu

You see the following submenu when you turn the snap off but leave the grid on.



Figure 5-6c. Grid Submenu — GRID On and SNAP Off

When the snap is turned off, DR Draw PICKs the cursor's exact location on the drawing surface. The cursor does not snap to the nearest grid point.

Turning off the snap is particularly useful when you are entering text strings inside boxes. For example, in the Menu Map at the beginning of this user's guide (Figure 1-2), the menu rectangles were drawn using the LINES design element with the snap turned on. The text strings were inserted in the boxes with the snap turned off.

SNAP ON

When you PICK the SNAP ON function, DR Draw turns the snap on.

LAYOUT

Purpose

The LAYOUT function tells DR Draw which output format to use when you send your picture file to the screen, printer, or plotter. Only the part of the picture file within the layout appears in output.

When you PICK the LAYOUT function from the Change Submenu, the Layout Submenu replaces the Change Submenu on the second line. If your menu cursor is a reverse video bar, it remains on the second menu line. If your menu cursor is a cross hair, it appears on the drawing surface. Section 4 describes menu cursors.

The Layout Submenu contains three layout formats.

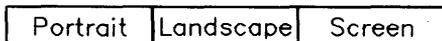


Figure 5-7. Layout Submenu

PORTRAIT

PORTRAIT is the format of a vertical sheet of standard letter-size paper, 8 1/2-inches wide by 11-inches high. A rectangular outline on the drawing surface shows you the PORTRAIT layout boundaries.

LANDSCAPE

LANDSCAPE is the format of a sheet of horizontal paper, 8 1/2-inches high by 11-inches wide. A rectangular outline on the drawing surface shows you the LANDSCAPE layout boundaries.

SCREEN

SCREEN format uses the entire drawing surface; the window frame is the layout boundary. When you PICK the CREATE function, DR Draw automatically places you in SCREEN layout.

Figure 5-8 shows the relationship of layout to output.

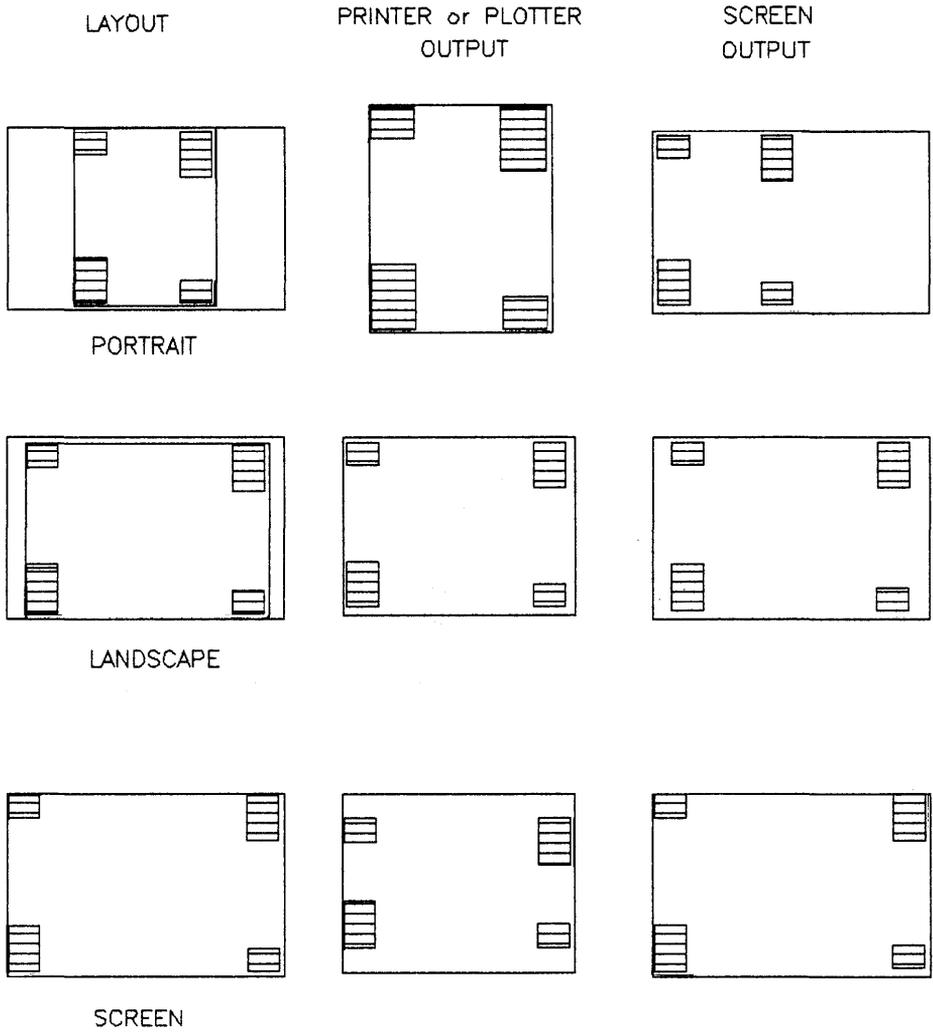


Figure 5-8. Layout to Output

MOVE

Purpose	The MOVE function allows you to relocate the current element to another position on the drawing surface.
Prompts	<p>When you PICK the MOVE function, DR Draw displays two prompts in the sequence below.</p> <p>PICK reference point</p> <p>PICK a reference point on or near the element's extent. Reference points are described under the COPY function.</p> <p>In many cases a corner of the extent is the easiest point to use.</p> <p>PICK new location, press DONE to finish</p> <p>Move the cursor to the reference point's new location anywhere on the drawing surface and PICK that point. DR Draw deletes the element from its current position and redraws it at the new location.</p> <p>If you are not satisfied with the element's location, you can PICK another point. Again, DR Draw deletes the element and redraws it in the new location. When you are satisfied with the location, press the DONE key to return to the Edit Menu.</p>

OUTPUT

Purpose	The OUTPUT function sends your picture file to one of four output devices.
Output Submenu	When you PICK the OUTPUT function, the Output Submenu appears on the second menu line. The Output Submenu lists the five possible output devices in the order shown below. If your menu cursor is a reverse video bar, it appears on the second menu line. If your menu cursor is a cross hair, it appears on the drawing surface. Section 4 describes menu cursors.

Printer	Plotter	Screen 1	Screen 2	Camera
---------	---------	----------	----------	--------

Figure 5-9. Output Submenu

Printer/Plotter	You can send your picture file to be printed on printer or plotter paper or on transparencies. If you specify a printer or plotter, DR Draw prints or plots a single copy of the picture file, then returns you to the Main Menu.
Screen 1/Screen 2	<p>You can send your picture file to a black and white screen or to a color screen if you have the necessary equipment and software. For more information, refer to the <i>Supplement</i>.</p> <p>DR Draw reproduces your picture file on a display screen without the window frame, layout lines, grid points, or menu lines.</p> <p>To return to the Main Menu from screen output, press the DONE key.</p>
Camera	<p>You can send your picture file to a camera output device to make prints or slides. DR Draw transmits the picture file to the camera device and then returns you to the Main Menu.</p> <p>For more information on camera output, consult the documentation that came with the output device.</p>

Prompt	<p>DR Draw displays one of two prompts after you PICK an output device.</p> <p>Picture filename?</p> <p>Type the filename after the prompt. If the filename is valid, DR Draw sends the picture file to the output device you PICKed.</p> <p>CHART? (or type new name)</p> <p>In this case, you have been working on a picture file called CHART.PIX and have either just saved or abandoned the file.</p> <p>If you have saved the file, this prompt allows you to produce output by pressing the RETURN key.</p> <p>If you have abandoned the file, this prompt allows you to produce output from the existing version of the file by pressing the RETURN key.</p> <p>In either case, this prompt also allows you to type a different filename and produce output from another picture file.</p>
Output Time	<p>DR Draw requires time to process a picture file for output. The amount of preparation time depends on the number and types of design elements in the file. Do not worry if the output does not appear immediately.</p>
Error Messages	<p>You can receive one of two error messages when you PICK the OUTPUT function. One error message is</p> <p>Abandon active picture file? (Y/N)</p> <p>You PICKed the OUTPUT function without saving your active picture file. DR Draw displays this message instead of the Output Submenu.</p> <p>If you respond Y (Yes), DR Draw abandons your active picture file and displays the Output Submenu. Section 4 discusses abandoning an active picture file.</p> <p>If you respond N (No), you return to the Main Menu.</p>

The other error message is

```
CHART: not found; press DONE
```

DR Draw cannot find the file you named (in this case, CHART). Press the DONE key to return to the Main Menu.

Check to see that you included a correct drive identifier, if one is required. The drive identifier appears in the message only if you gave it in your response to the filename prompt.

This message also appears when you do the following:

1. create a new picture file called CHART, but do not save it
2. PICK the OUTPUT function. DR Draw displays the "Abandon active picture file?" prompt.
3. abandon the active picture file. DR Draw displays the prompt

```
CHART? (or type new name)
```

4. press the RETURN key

DR Draw displays the error message because no file called CHART exists.

RECALL

Purpose

The RECALL function lets you retrieve a picture file that you saved. DR Draw opens an active picture file by copying the file stored on your diskette. The original remains on the diskette unless you replace it with the SAVE function.

PICKing the RECALL function is like the following:

- going to the cabinet where you store your drawings
- taking out a drawing
- making a photocopy of the drawing
- returning the original to the storage cabinet
- putting the copy on your drawing table

Prompt

DR Draw displays one of two prompts when you PICK the RECALL function. One prompt is

Picture filename?

Respond by typing the filename. For example, type CHART. You do not need to give the .PIX filetype; DR Draw searches only for files with that filetype.

If the file is in your directory, you see the following message:

CHART: reading file

DR Draw displays the picture file and automatically places you in the EDIT function. You can then begin work on the file.

The other prompt is

CHART? (or type new name)

This prompt indicates that you have been working on a picture file called CHART.PIX and have either just saved or abandoned the file.

If you have saved the file, this prompt allows you to recall it by pressing the RETURN key.

If you have abandoned the file, this prompt allows you to recall the existing version of the file by pressing the RETURN key.

In either case, the prompt also allows you to type a different filename and recall another picture file.

If the file is in your directory, you see the message:

```
CHART: reading file
```

DR Draw displays the picture file and automatically places you in the EDIT function. You can then begin work on the file.

Reading Files

The amount of time DR Draw needs to read your file will vary, depending on the number and types of design elements in the file. For example, circles take longer to read than bars.

Current Element

When you RECALL a file, the current element is always the first design element that you added when you began the file.

Retained Attributes

The following attributes of the recalled picture file are retained from the last time you worked on the file:

- the location of the window on the drawing surface
- the layout
- the status of GRID and SNAP

Error Messages

You can receive one of three error messages when you PICK the RECALL function. One error message is

```
CHART: not found, Press DONE
```

You gave a filename (in this case, CHART) that is not on the diskette. If you give a drive identifier as part of the filename, DR Draw includes it in the message.

Press the DONE key to return to the Main Menu. To recall a picture file, PICK the RECALL function again and give another filename.

This message also appears when you do the following:

1. create a new picture file called CHART, but do not save it
2. PICK the RECALL function. DR Draw displays the "Abandon active picture file?" prompt.
3. abandon the active picture file. DR Draw displays the prompt

CHART? (or type new name)

4. press the RETURN key

DR Draw displays the error message because no file called CHART exists.

The second error message is

Abandon active picture file? (Y/N)

You PICKed the RECALL function without saving your active picture file. DR Draw displays this error message instead of the prompt.

If you respond Y (Yes), DR Draw abandons the active picture file and prompts

Picture filename?

or

CHART? (or type new name)

Section 4 discusses abandoning an active picture file.

If you respond N (No), DR Draw returns you to the Main Menu. To continue working on your active picture file, PICK the EDIT function. To save the active file, PICK the SAVE function.

The third error message is

CHART: incorrect format, press DONE

DR Draw displays this message in several situations.

1. You gave a .PIX filetype to a file that was not created with DR Draw. DR Draw cannot read the file. You can avoid this situation by not combining picture files and other files on the same diskette.
2. Your computer lost power when you were saving a file. You find the file in your directory the next time you start your computer, but the file is missing information that DR Draw needs in order to read it successfully.
3. There is a problem with the diskette from which you are trying to recall the file. The diskette might need to be reformatted, in which case all files on the diskette are lost. However, you might be able to save some of the files if you copy the diskette before you reformat it.

REDRAW

Purpose

The REDRAW function lets you

- see your picture file in its current state
- redraw the grid

Several of the EDIT functions, especially DELETE and MOVE, can alter the appearance of design elements or the grid.

For example, if you place a polygon on top of a circle, the polygon masks some or all of the circle. If you delete the polygon, you cannot see the masked part of the circle until you use the REDRAW function.

Similarly, when the grid is on, moving an element deletes the grid points under the element's original position. Use the REDRAW function to restore the grid.

When the REDRAW is complete, DR Draw returns you to the Edit Menu.

SAVE

Purpose

The SAVE function stores your active picture file on a diskette. When you save a file, you can

- retain the file's original name
- rename the file

The descriptions of the CREATE and RECALL functions use the analogy of a storage cabinet where you keep your pictures. With the SAVE function the analogy takes one of two forms, depending on whether you created or recalled the file.

Created Files

When you create a file, you write the file's name on an empty folder in your storage cabinet. When you save a file under its original name, you go over to the cabinet and slip the picture into its folder. When you rename the file, you change the name on the folder before putting the picture inside.

Recalled Files

When you recall a file, the original stays in the folder in the storage cabinet. You work on a copy.

Saving the file under its original name is like going to the folder, destroying the original, and replacing it with the new version.

When you rename the file, you go to the cabinet and open up a new folder. The new version of the file, bearing the new name, goes into the new folder. The old version remains in the cabinet under its original name.

Prompt DR Draw displays the following prompt when you PICK the SAVE function.

```
CHART? (or type new name)
```

Press the RETURN key to save the file under its original name (in this example, CHART). To save the file under a new name, type the new name before you press the RETURN key.

DR Draw displays one of these messages while the file is being saved:

```
CHART: saving file
```

or

```
NEWNAME: saving file
```

Error Message You can receive one of two error messages when you PICK the SAVE function.

```
No active picture file, press DONE
```

You PICKed the SAVE function without having an active picture file. Press the DONE key to return to the Main Menu.

```
CHART: already exists, press DONE
```

To rename the file, you gave the name of a file that is already on the diskette with a .PIX filetype. Press the DONE key to return to the Main Menu.

SCALE

Purpose	<p>The SCALE function lets you</p> <ul style="list-style-type: none"> ■ enlarge or reduce stroke font text ■ enlarge, reduce, or change the proportions of elements other than text <p>The SCALE function affects only the current element.</p>
PICK a New Extent	<p>You tell DR Draw how much to enlarge or reduce the current element by PICKing the opposite corners of a rectangle that becomes the element's new extent.</p>
Changing Proportions	<p>For all design elements but text, you can change the element's proportions. For example, you can use SCALE to change a circle to an oval.</p>
Moving Elements with SCALE	<p>The new extent that you define can be anywhere inside the window frame. You can, for example, use SCALE to change a large circle in the upper left corner of the drawing surface to a small oval in the lower right corner.</p>
SCALE: Text	<p>When you PICK the SCALE function to enlarge or reduce the size of stroke font characters, DR Draw displays three prompts in the sequence below.</p>
Prompts	<p>PICK corner of new extent</p> <p>Move the cursor to a point on the drawing surface and PICK the first corner of the new text extent. Unless you want to move the string at the same time, you can use the same point that you PICKed when you first entered the string. When you PICK the point, DR Draw extends vertical and horizontal lines to show you two sides of the extent.</p> <p>PICK opposite corner of new extent</p> <p>Move the cursor diagonally and PICK the opposite corner of the new extent.</p>

DR Draw extends a second set of vertical and horizontal lines. For the reasons given below, the intersection of the two lines might not be the point you PICKed. Figure 5-10 illustrates how the two points can differ.

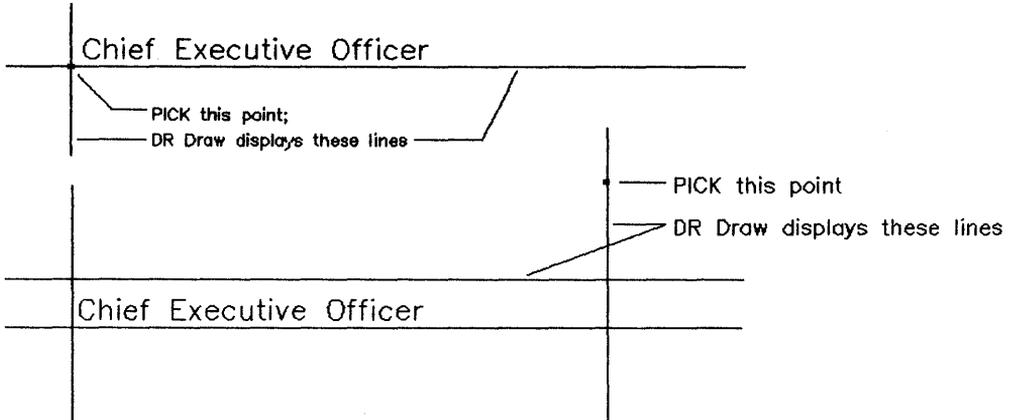


Figure 5-10. Scaling Text

You can change the size of stroke font characters but not their proportions. The two points you PICK define a rectangle into which DR Draw tries to fit the text string. The lines that DR Draw displays indicate the best fit of the string in the rectangle you defined.

The lines that DR Draw displays are an accurate indicator of the string's new size and shape.

PICK moves second corner, DONE finishes

If you are not satisfied with the size of the extent, you can move the cursor and PICK a new second point.

When you press the DONE key, DR Draw redraws the text string in the new size and returns you to the Edit Menu.

Error Message

You can receive the following error message when you PICK the SCALE function.

```
Cannot SCALE machine font; Press DONE
```

You tried to SCALE machine font characters. The size of machine font characters cannot be changed.

SCALE: Non-Text Elements

The SCALE function lets you enlarge, reduce, or change the proportions of POLYGON, CIRCLE, ARC, LINES, or MARKERS design elements.

When you PICK the SCALE function with a non-text current element, DR Draw displays a submenu that gives you the option of retaining or changing the element's proportions.



Figure 5-11. Scale Submenu

UNIFORM retains the element's proportions. The resulting element is larger or smaller than the original, but it is the same shape.

NON-UNIFORM changes the element's proportions. In addition to being larger or smaller than the original, the resulting element is a different shape.

Figure 5-11 illustrates how SCALE works on text, markers, and a polygon.

original

uniform

non-uniform

DR Draw

DR Draw

(text cannot be scaled non-uniformly)

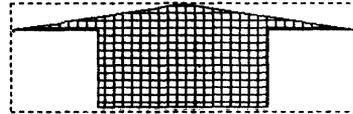
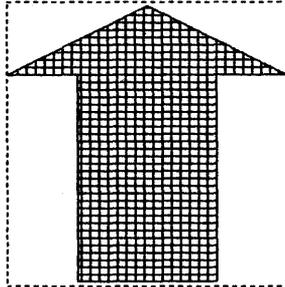
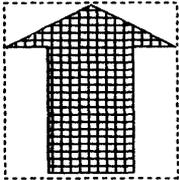


Figure 5-12. SCALE Example

Scaling Markers

Markers are a special case. Because they are machine font characters, you cannot scale single markers. You can, however, scale markers that you entered in a group. DR Draw changes the distance between the markers without changing the size of the markers. For more details on markers, refer to Section 6.

Prompts

After you PICK the SCALE function, DR Draw displays three prompts in the sequence below.

PICK corner of new extent

Move the cursor to a point on the drawing surface and PICK one corner of the new extent. When you PICK the point, DR Draw extends vertical and horizontal lines to show you two sides of the extent.

PICK opposite corner of new extent

Move the cursor diagonally and PICK the opposite corner of the new extent. DR Draw again extends vertical and horizontal lines. The rectangle formed by the intersection of the four lines allows you to preview the new extent.

PICK moves second corner, DONE finishes

If you are not satisfied with the size and/or shape of the extent, you can move the cursor and PICK a new second point.

When you press the DONE key, DR Draw redraws the element to fit the new extent, then returns you to the Edit Menu.

Error Message

You can receive the following error message when you PICK the SCALE function.

Cannot SCALE this element, press DONE

DR Draw displays this error message in two situations.

1. You tried to scale a single marker. Because a marker is a machine character, you cannot change its size.
2. You tried to scale an element that is so small that DR Draw thinks it is a single point. This unusual situation can arise when you zoom out many times.

SELECT

Purpose

The SELECT function lets you choose a new current element from among the elements on the drawing surface.

SELECT Rectangle

You select a current element by PICKing two points that mark the opposite corners of a rectangle. This rectangle must do one of the following:

- enclose the entire design element
- enclose one corner of the extent around the design element
- enclose one vertex of any design element except TEXT

Figure 5-13 illustrates the three ways you can select a current element. The second part of the figure, "enclose corner of extent," shows the extents around the two elements. The extent is not visible when you PICK the SELECT function, but is shown here for purposes of illustration.

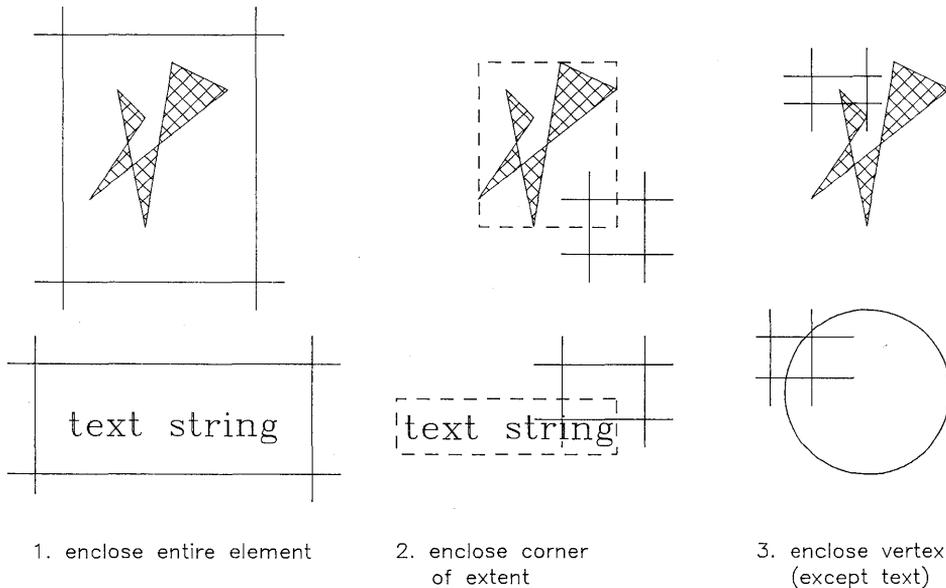


Figure 5-13. Selecting a Current Element

Design Element
Vertex

With the exception of the center of a circle or open arc, a vertex is any point you PICK while drawing a circle, arc, polygon, line, or group of markers. In addition, almost any point on the curved line of an arc or circle can be a vertex. The black circles in Figure 5-14 identify the vertices for each element.

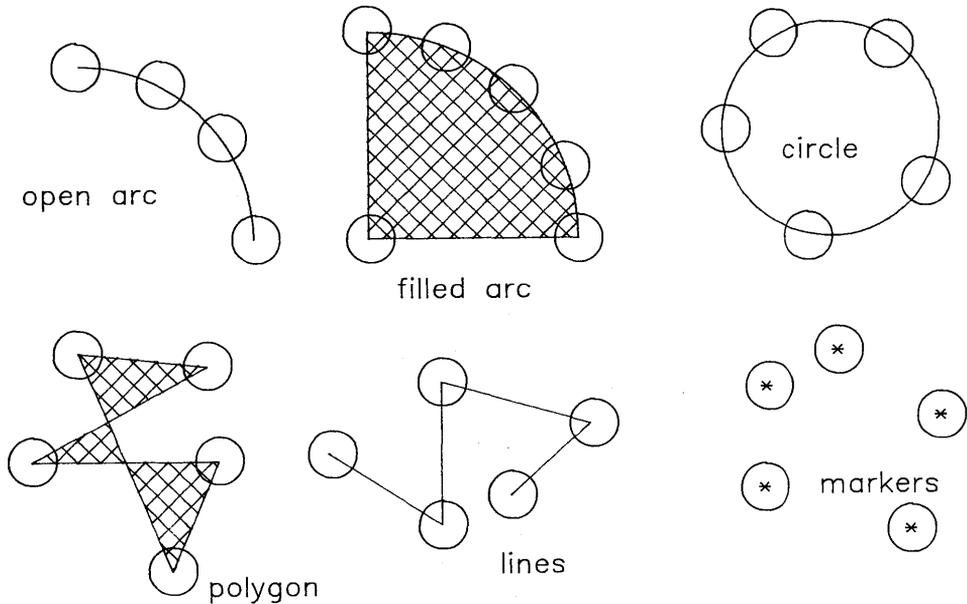


Figure 5-14. Vertices

Figure 5-14 does not include a bar, because the vertices for the BAR design element are the same as the corners of the element's extent.

How SELECT Works

Following the prompts described below, PICK the opposite corners of the SELECT rectangle. DR Draw looks at the part of the picture file inside the rectangle and follows this series of steps:

1. If the rectangle entirely encloses a design element, DR Draw selects it as the current element.

If the rectangle encloses more than one design element, DR Draw selects the first-drawn.

If the rectangle does not entirely enclose a design element, DR Draw passes to the next step.

2. If the rectangle encloses the corner of the extent around a design element, DR Draw selects it as the current element.

If the rectangle encloses the corner of more than one extent, DR Draw selects the first-drawn.

If the rectangle does not enclose the corner of an extent, DR Draw passes to the next step.

3. If the rectangle encloses a vertex of an arc, circle, line, or polygon, or if it encloses a single marker in a group of markers, DR Draw selects that element as the current element. Figure 5-15 shows how you can enclose a vertex to select a design element in a shared extent, in this example an octagon inscribed in a square.

If the rectangle encloses vertices of more than one element or markers from more than one group of markers, DR Draw selects the first-drawn element.

If the rectangle does not enclose a vertex or a marker, DR Draw retains the present current element as current element.

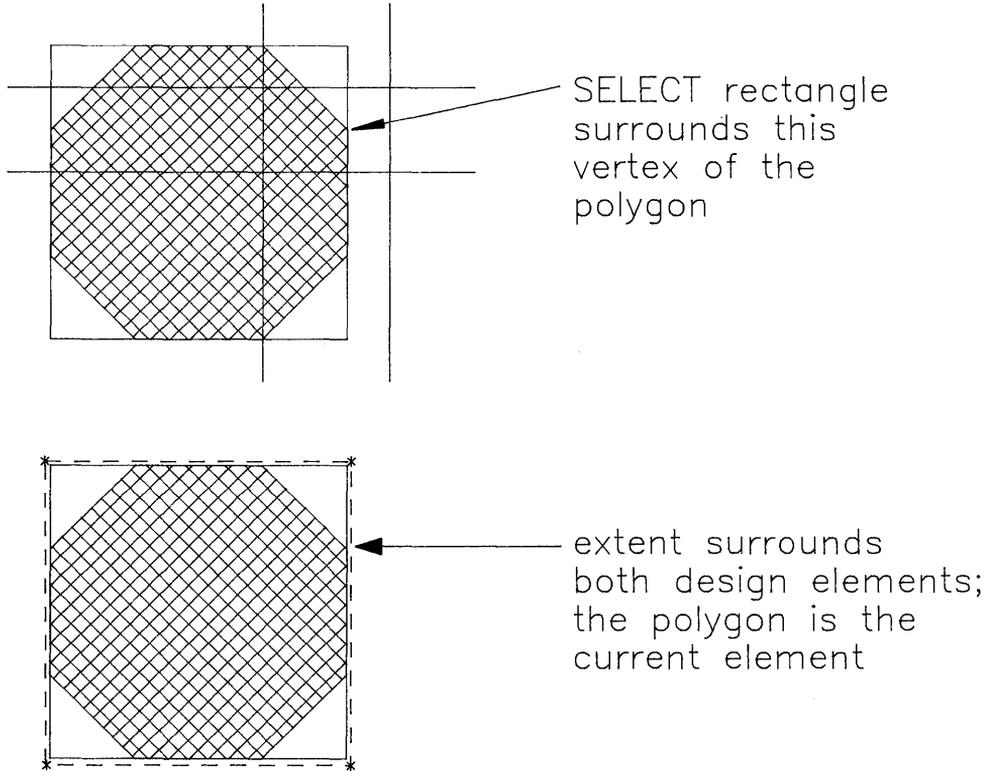


Figure 5-15. Selecting One Element from a Shared Extent

Prompts

When you PICK the SELECT function from the Edit Menu, DR Draw displays three prompts in the sequence below.

PICK corner of rectangle

Move the cursor to one corner of the rectangle and PICK that point. DR Draw extends vertical and horizontal lines from the point.

PICK opposite corner of rectangle

Move the cursor to the rectangle's opposite corner and press the PICK key again. DR Draw projects vertical and horizontal lines from this point too.

PICK moves second corner, DONE finishes

If you are not satisfied with the rectangle, you can move the cursor and PICK a different second corner. When you press the DONE key, DR Draw selects the new current element, draws an extent around it, and returns you to the Edit Menu.

Selecting TEXT

To select a text string, make the rectangle larger than you would for other design elements. The extent around a text string is somewhat larger than the characters it encloses. Figure 5-13 shows text in an extent.

STYLE

Purpose

The STYLE function changes the style attribute of your current element. Depending on the current element, the style attribute is one of the following:

- type style
- line style
- fill pattern
- marker style

When you PICK the STYLE function from the Change Submenu, the Style Submenu replaces the Change Submenu on the second line. If your menu cursor is a reverse video bar, it remains on the second menu line. If your menu cursor is a cross hair, it appears on the drawing surface. Section 4 describes menu cursors.

The contents of the Style Submenu depend on whether the current element is text, a filled element, an open element or a line, or markers.

For more information on styles, refer to Section 4 and to the descriptions of the design elements in Section 6.

Text

When the current element is text, DR Draw displays the following Style Submenu:

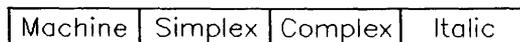


Figure 5-16. Style Submenu for TEXT

The description of the TEXT design element in Section 6 discusses the three default fonts and the font library. Appendix A explains how you can replace the default fonts for the Complex and Italic submenu selections with fonts from the library.

The initial style for text is the machine font.

Filled Elements

When the current element is a filled arc, filled circle, polygon, or bar, DR Draw displays a submenu of fill patterns. A small rectangle marks your position on the submenu. The type of computer you have determines the number of fill patterns in the submenu.

Some printers or plotters might not be able to reproduce all the fill patterns you see on your computer. You can create a sample file by drawing a bar or polygon for each fill pattern your computer displays. Printing the file lets you see how the fill patterns appear in output.

The initial style for filled elements is a solid fill.

Open Elements and Lines

When the current element is an open arc, open circle, or a line, DR Draw displays a submenu of line styles. The type of computer you have determines the number of line styles in the submenu.

Some printers or plotters might not be able to reproduce all the line styles you see on your computer. You can create a sample file by drawing a line for each style your computer displays. Printing the file lets you see how the line styles appear in output.

The initial style for lines is a solid line.

Markers

When the current element is a marker, DR Draw displays a submenu of five marker styles.

Refer to the description of the MARKERS design element in Section 6 for more details on MARKERS.

The initial style for MARKERS is an asterisk.

UNDELETE

Purpose	<p>The UNDELETE function redraws the element that was most recently deleted from the picture file.</p> <p>DR Draw redraws the element, makes it the current element, and returns you to the Edit Menu.</p> <p>UNDELETE works only on the last deleted element; previously deleted elements are lost.</p>
Design Element Order	<p>Because it redraws design elements, the UNDELETE function can change the order of design elements in a picture file. The undeleted element becomes the newest addition to the picture file.</p> <p>For example, if you select the arc (number 3) in Figure 5-4, delete, then undelete it, the redrawn arc is element number 6.</p> <p>For more on design element order, refer to the description of the DELETE function.</p>
Error Message	<p>You can receive the following error message when you PICK the UNDELETE function.</p> <p><code>No deleted element, press DONE</code></p> <p>You PICKed UNDELETE without having deleted anything. Press the DONE key to return to the Edit Menu.</p>

VIEW

Purpose

The VIEW function permits you to move the window over the drawing surface or to change design element order.

When you PICK the VIEW function from the Change Submenu, the View Submenu replaces the Change Submenu on the second line. If your menu cursor is a reverse video bar, it remains on the second menu line. If your menu cursor is a cross hair, it appears on the drawing surface. Section 4 describes menu cursors.

The View Submenu lists five functions.

Zoom In	Zoom Full	Zoom Out	Pan	Put to Back
---------	-----------	----------	-----	-------------

Figure 5-17. View Submenu

ZOOM IN

ZOOM IN gives you a close-up view of a portion of what is currently in the window. To identify what you want to see in close-up, you PICK the opposite corners of a rectangle that DR Draw fits to the window frame.

Prompts

When you PICK the ZOOM IN function, DR Draw displays three prompts in the sequence below.

PICK corner of window

PICK the first corner of the rectangle. When you press the PICK key, horizontal and vertical lines extend from the cursor's position to the window frame.

PICK opposite corner of window

Move the cursor diagonally to the opposite corner of the rectangle and press the PICK key again. A second set of horizontal and vertical lines extends from the cursor's position to the window frame. The rectangle formed by these lines gives you a preview of the area that will be enclosed by the window frame.

PICK moves second corner, DONE finishes

If you are not satisfied with the location of the second point, you can continue to move the cursor and press the PICK key. When you press the DONE key, DR Draw displays the close-up by fitting the rectangle you defined to the window frame. DR Draw then returns you to the Edit Menu.

The Grid

ZOOM IN decreases the density of the grid; individual points are farther apart.

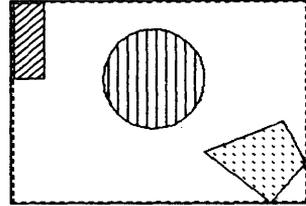
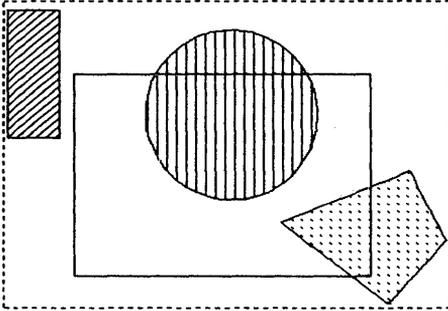
ZOOM FULL

ZOOM FULL fits all the elements in your picture file to the current layout.

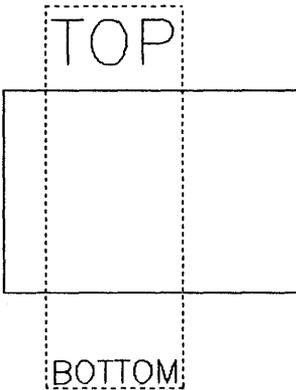
If part of the picture file is outside the layout, ZOOM FULL proportionally reduces the elements and the space between them.

If the whole picture file is within the layout, ZOOM FULL proportionally enlarges the elements and the space between them.

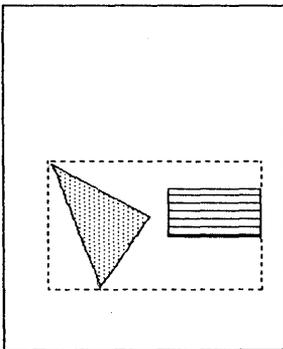
Figure 5-16 illustrates three ways ZOOM FULL fits and centers the picture file in the layout. The broken-line outlines represent picture files, which can contain any combination of design elements. The solid-line outlines are the layouts.



1. same proportions



2. horizontal centering



3. vertical centering

Figure 5-18. ZOOM FULL Example

In the first example, the picture file is larger than the layout but has the same proportions. ZOOM FULL reduces the picture file and fits it to the layout on all sides.

In the second example, the proportions of the picture file and layout are different. ZOOM FULL reduces the picture file to fit the layout and centers the picture file horizontally.

In the third example, the picture file is entirely within the layout but again has different proportions. ZOOM FULL enlarges the picture file and centers it vertically.

ZOOM OUT

ZOOM OUT reduces both the elements in the picture file and the space between them to two thirds their present size. The effect of ZOOM OUT is similar to what happens when you stand before a picture, then step back from it.

ZOOM OUT also reduces the distance between grid points by the same amount. The grid becomes more dense.

PAN

PAN allows you to move the picture file horizontally, vertically, or diagonally in the window. The effect of PAN is similar to what happens if you move a rectangular frame over a large sheet of paper.

When you PICK the PAN function, DR Draw displays intersecting lines that indicate the center of the window.

Prompt

DR Draw displays the following prompt when you PICK the PAN function.

```
PICK new center of window
```

Move the cursor to a point on the drawing surface that you want as the new center of the window. When you press the PICK key, DR Draw redraws the picture file with the new point in the center of the window.

PUT TO BACK

PUT TO BACK changes design element order by making the current element the first element in the picture file. When elements overlap or share the same extent, you can use PUT TO BACK to take the element on top and put it underneath.

Section 6

DESIGN ELEMENTS

INTRODUCTION

This section describes the seven DR Draw design elements in alphabetical order.

- ARC
- BAR
- CIRCLE
- LINES
- MARKERS
- POLYGON
- TEXT

Add Submenu

When you PICK the ADD function from the Edit Menu, the Add Submenu appears on the second menu line. The Add Submenu lists DR Draw's seven design elements in the order shown below. If your menu cursor is a reverse video bar, it appears on the second menu line. If your menu cursor is a cross hair, it appears on the drawing surface. Section 4 describes menu cursors.

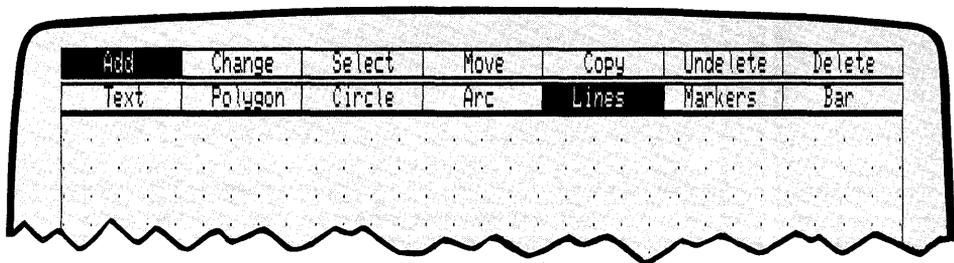


Figure 6-1. Design Elements in the Add Submenu

Prompts

After you PICK a design element, DR Draw displays prompts that instruct you how to draw the element.

Some design elements have two or more prompts, in which case you respond to one prompt before DR Draw displays the next. The design element descriptions list the prompts in the order you receive them and follow each prompt with a description of how you respond.

ARC

Definition

An arc can be either part of the circumference of a circle (a curved line) or a filled pie section.



Prompts

When you PICK the ARC design element, DR Draw displays three prompts in the sequence below.

PICK arc center

PICK a point on the drawing surface to be the center of the arc.

PICK arc radius/beginning of arc

PICK a second point on the drawing surface. This point serves two purposes:

1. It defines the radius of the arc.
2. It defines the beginning of the arc. If you think of an arc as resembling the sweep of a windshield wiper, the beginning of the arc is like the wiper's position at the start of its sweep.

PICK end of arc

PICK a third point to define the end of the arc. To use the windshield wiper analogy again, the end of the arc is like the wiper's position at the end of its sweep.

Because the arc's radius is established when you PICK the second point, the third point can be anywhere on a line from the center, as Figure 6-2 illustrates.

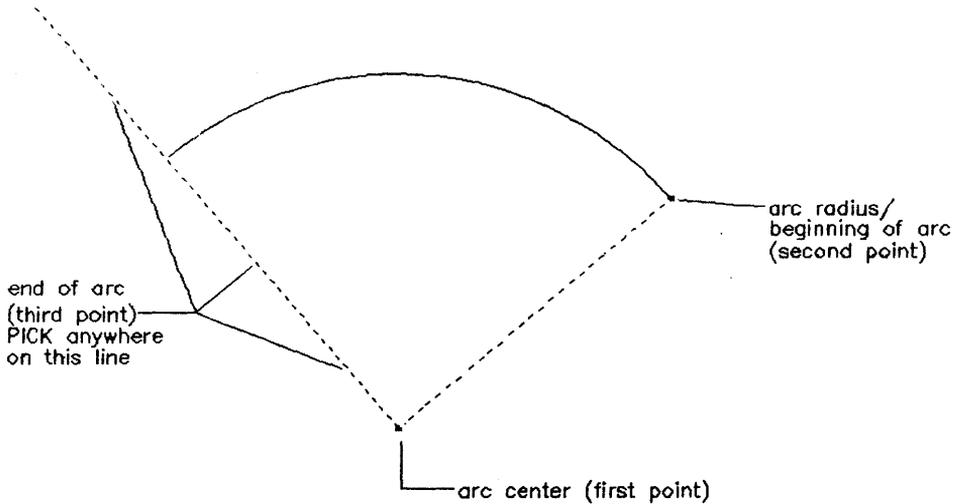


Figure 6-2. Drawing an Arc

After you PICK the last point, DR Draw shows you a submenu:

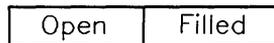


Figure 6-3. Arc Submenu

OPEN Arcs

An OPEN arc is a curved line that is part of the circumference of a circle. The initial line style is a solid line. You can change style to one of several other line styles.

FILLED Arcs

A FILLED arc is a pie section. The initial style for fill is solid. You can change the fill to one of several other patterns, including a hollow fill.

Changing Style

For more information on changing style, see the subsection on STYLE in Section 4 and the description of the STYLE function in Section 5.

Drawing Arcs

The order in which you PICK the second and third points determines the appearance of the arc you draw. In both parts of Figure 6-4, the three points are the same, but the order of the second and third points is reversed. The arrow shows how DR Draw always starts with the second point and draws counterclockwise. If you PICK the sequence on the left, you get a pie slice. If you PICK the sequence on the right, you get the pie with the slice missing.

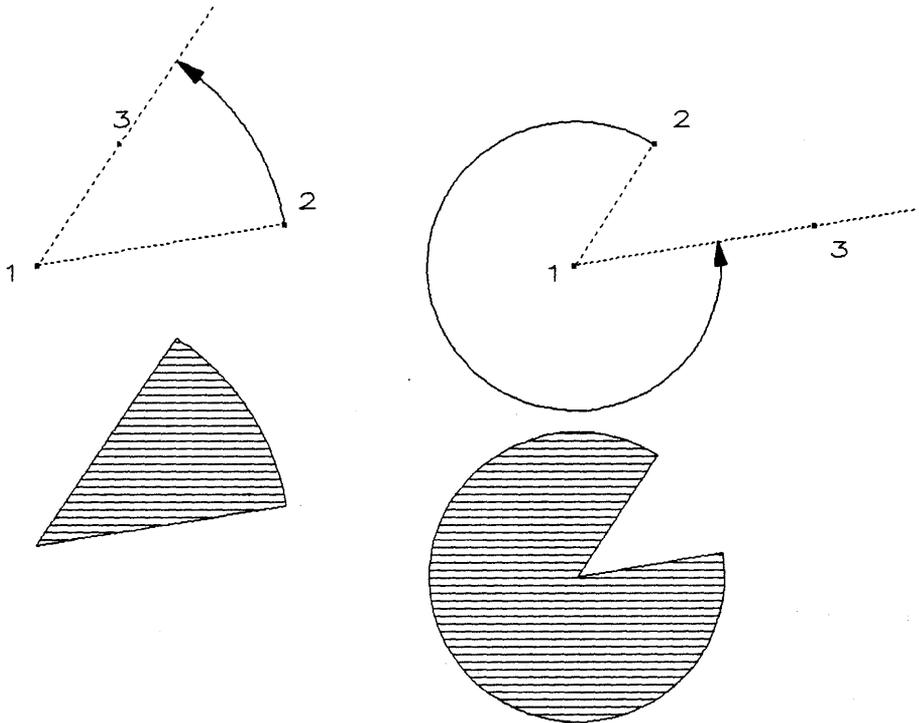


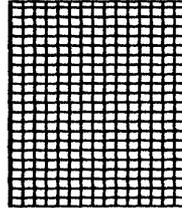
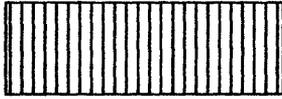
Figure 6-4. Drawing Arcs

In addition, because the distance between points 1 and 2 is shorter on the right, the pie has a smaller radius than the slice.

BAR

Definition

A bar is a filled rectangle.



Prompts

When you PICK the BAR design element, DR Draw displays two prompts in the sequence below.

PICK corner of bar

PICK a point on the drawing surface.

PICK opposite corner of bar

Move the cursor diagonally to the opposite corner of the rectangle and press the PICK key again.

As soon as you PICK the second corner point, DR Draw draws the bar and returns you to the Edit Menu.

Fill

The initial style for bars is a solid fill. You can change the fill to one of several other patterns, including a hollow fill.

Changing Style

For more information on changing style, see the subsection on STYLE in Section 4 and the description of the STYLE function in Section 5.

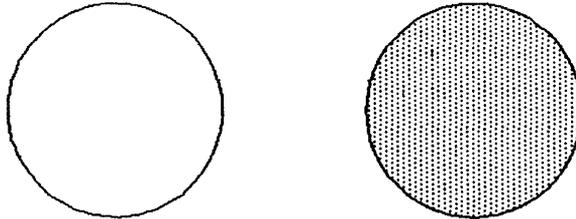
Text in Bars

You can insert text in a bar with hollow fill, but you must add the text after you draw the bar. Otherwise, the hollow fill pattern masks the text. You can avoid this situation by drawing the box with the LINES design element instead.

CIRCLE

Definition

A circle can be either a circular outline or a filled disk.



Prompts

When you PICK the CIRCLE design element, DR Draw displays two prompts in the sequence below.

PICK circle center

PICK a point on the drawing surface to be the center of the circle.

PICK circle radius

Move the cursor any direction and PICK another point to establish the circle's radius.

Submenu

After you PICK the second point, DR Draw shows you a submenu:



Figure 6-5. Circle Submenu

OPEN Circle

An OPEN circle is a circular outline. The initial line style is a solid line. You can change its style to one of several other line styles.

FILLED Circle

The initial fill style is a solid fill. You can change the fill to one of several other patterns, including a hollow fill.

Changing Style

For more information on changing style, see the subsection on STYLE in Section 4 and the description of the STYLE function in Section 5.

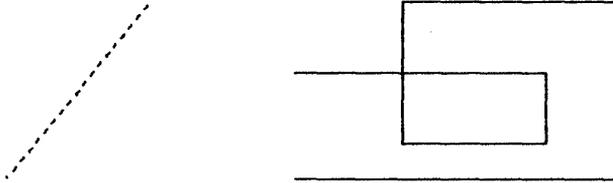
Circles on
Your Screen

Because of the resolution and aspect ratio of some display monitors, circles can appear slightly oval on the drawing surface and in screen output. However, this effect is not present in printer or plotter output.

LINES

Definition

The LINES design element can be a single straight line or a series of connected line segments.



Prompt

When you PICK the LINES design element, DR Draw displays a single prompt.

PICK points; Press DONE when finished

PICK a starting point. Move the cursor to another point on the drawing surface, and PICK an endpoint.

If you want a single straight line, press the DONE key to return to the Edit Menu.

If you want a series of connected line segments, continue moving the cursor and pressing the PICK key. After you PICK the endpoint of the last line segment, press the DONE key to return to the Edit Menu.

Rubberband Line

If your computer supports this feature, you can preview a line segment before you PICK its endpoint. DR Draw connects the starting point and the cursor with a line that stretches like a rubber band as you move the cursor over the drawing surface. When you are satisfied with the position of the line, PICK the endpoint.

Style

The initial style for lines is a solid line. You can change style to one of several other line styles.

Changing Style

For more information on changing style, see the subsection on STYLE in Section 4 and the description of the STYLE function in Section 5.

Text in Boxes

You can place text inside boxes drawn with lines, as in Figure 6-6. Unlike bars, polygons, filled circles, and filled arcs, shapes drawn with lines do not have a fill pattern that masks your text.

Drawing Over Lines

You can draw over lines. For example, to draw the lines that connect the boxes in Figure 6-6, follow this sequence:

- PICK a starting point on the lefthand box.
- Move the cursor to the righthand box and PICK the endpoint of the first line segment.
- Move the cursor back over the line to its midpoint and PICK again.
- Move the cursor down to the lower box and PICK the final point.
- Press the DONE key.

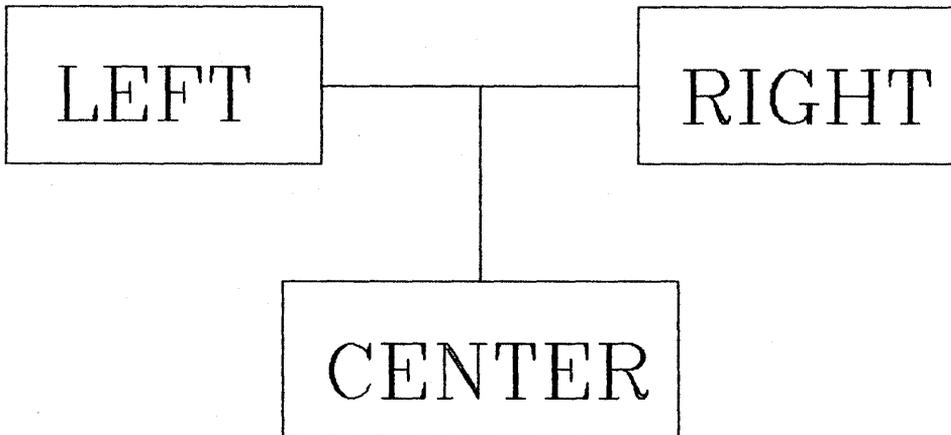


Figure 6-6. LINES Example

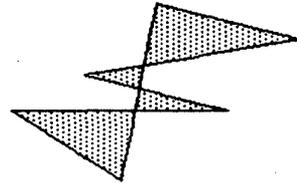
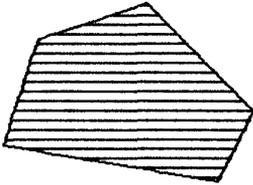
MARKERS

Definition	<p>A marker is a character that you can use to mark points, highlight, or accent design elements. Five marker styles are available.</p> <p style="text-align: center;"> + * O X</p>
Prompt	<p>When you PICK the MARKERS design element, DR Draw displays a single prompt.</p> <p>PICK points, Press DONE when finished</p> <p>To draw only one marker, move the cursor to the desired position on the drawing surface and press the PICK key. Then press the DONE key to return to the Edit Menu.</p> <p>To draw several markers, move the cursor and PICK each marker position before you press the DONE key to return to the Edit Menu.</p>
Groups of Markers	<p>When you add several markers at once, DR Draw treats them as a single element. Functions like MOVE, COPY, and DELETE affect the entire group. In addition, you cannot select individual markers from a group that was entered together.</p>
Initial Style	<p>The initial style for MARKERS is an asterisk. You can change style to one of several other marker styles.</p>
Changing Style	<p>For more information on changing style, see the subsection on STYLE in Section 4 and the description of the STYLE function in Section 5.</p>
Printing Markers	<p>Markers are machine characters, not stroke font characters. The appearance of markers on printed output depends on your printer or plotter. For ready reference you can create and print a file with samples of each marker style.</p>
Marker Size	<p>Because markers are machine characters, you cannot scale them individually. You can, however, scale the extent of a group of markers, as Figure 5-12 illustrates.</p>

POLYGON

Definition

A polygon is a closed figure made up of straight line segments. Closed means that the beginning point of the first line segment is the same as the endpoint of the final line segment. The figures below are all polygons.



Prompt

When you PICK the POLYGON design element, DR Draw displays a single prompt.

PICK points, press DONE when finished

PICK a point on the drawing surface. Complete the first line segment by moving the cursor and PICKing another point. Then move the cursor and PICK points to complete each subsequent line segment. Complete the polygon by joining the first and last points. Press the DONE key to return to the Edit Menu.

Rubberband Line

If your computer supports this feature, you can preview each line segment before you PICK its endpoint. DR Draw connects the starting point and the cursor with a line that stretches like a rubber band as you move the cursor over the drawing surface. When you are satisfied with the position of the line, PICK the endpoint.

Fill

A polygon is a filled element. The initial style is a solid fill. You can change the fill to one of several other patterns, including a hollow fill. The fill pattern appears when you press the DONE key.

Changing Style

For more information on changing style, see the subsection on STYLE in Section 4 and the description of the STYLE function in Section 5.

ZOOM IN and PAN

When you use **ZOOM IN** or **PAN** so that part of the polygon is outside the window frame, DR Draw eliminates the fill pattern. If you then use **PAN**, **ZOOM FULL**, or **ZOOM OUT** to bring the entire element back inside the window frame, DR Draw restores the fill pattern.

For more information on these DR Draw functions, refer to Section 5.

TEXT

Text Strings

A text string is a word, phrase, sentence, or any other group of characters and spaces you enter from the keyboard.

You can use a variety of font styles from the DR Draw font library, which is described later in this section and in detail in Appendix A. Available characters include alphabetic and numeric characters, punctuation marks (except for the exclamation point), and the Greek alphabet.

Prompt

When you PICK the TEXT design element, DR Draw displays a single prompt.

```
PICK start, type, RETURN; DONE finishes
```

Move the cursor to the place where you want your text string to begin and press the PICK key. The text cursor replaces the graphics cursor on the drawing surface to indicate where typed characters appear.

Type the text string and press the RETURN key.

The text cursor disappears, and the graphics cursor reappears one text line below the previous line. You now have the following options:

- PICK the cursor's present location as a point for entering text.
- Move the cursor to a point on the same line as the previous string and PICK the start of a new string.
- Move the cursor to another position on the drawing surface and PICK the start of a new string.
- Press the DONE key to complete your text input and return to the Edit Menu.

RETURN Key and DONE Key

The text prompt makes a distinction between the RETURN key and the DONE key. They are the same key on your keyboard, but they are functionally different.

When you press the RETURN/DONE key at the end of a text string, it functions as a RETURN key. The graphics cursor moves down a line, and you can enter more text.

When you press the RETURN/DONE key again, without PICKing a new point for entering text, it functions as a DONE key. DR Draw terminates your text input and returns you to the Edit Menu.

Correcting Typing Errors

If you notice a typing error in your text string before you press the RETURN key, you can correct it by using the BACKSPACE key. Because the BACKSPACE key deletes characters, you have to retype the string from the point of the error.

If you see the error after you press the RETURN key, use DELETE to erase the entire string and enter it again.

Current Element

When you enter multiple strings and press the DONE key to end your text input, the last string you entered becomes the current element.

Text String Length

A single text string can be up to 79 characters long.

However, you can enter text strings that are longer than the available line length on your display. For example, if you

- have an 80-column display
- start a text string anywhere after the second column
- enter a 79-character text string

the string extends past the right edge of the window frame. DR Draw handles this situation in the following manner:

- The text cursor stops when it reaches the window frame.

- From then on, each character or space that you type appears in the position immediately preceding the cursor, as Figure 6-7 illustrates. By displaying the characters in this way, DR Draw permits you to check the accuracy of your typing.
- When you finish the string and press the RETURN key, the entire string becomes part of your active picture file. However, as Figure 6-7 also shows, you can only see the part of the string that is inside the window frame. You can use PAN, ZOOM OUT, or ZOOM FULL to bring the whole string back onto the drawing surface and make it fully visible.

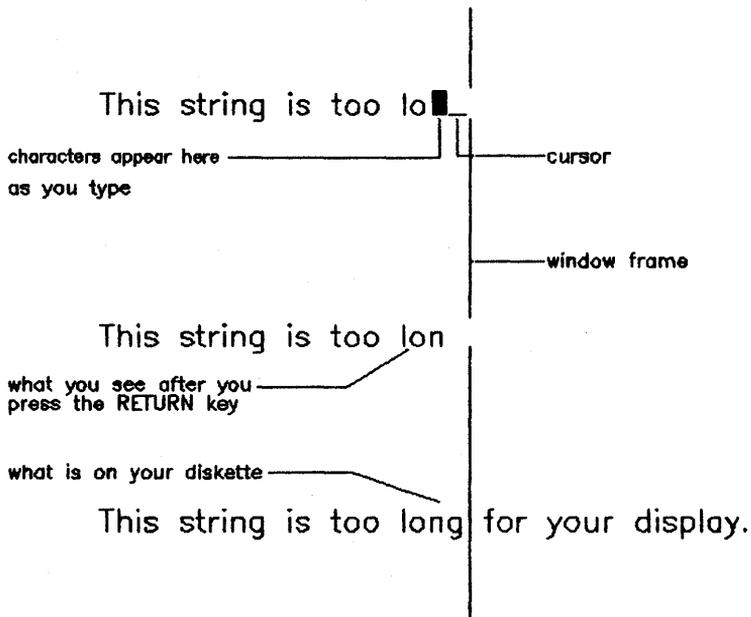


Figure 6-7. Text Too Long for the Display

Machine Fonts

Machine font is the type style generated by your computer. The size and shape of machine font characters depend on the computer you are using. You cannot change the size of machine font text.

Printers and plotters also have their own machine fonts distinct from the computer's. For that reason, you can expect printed output of machine font text to be different from what you see on your display monitor.

Stroke Fonts

The other fonts are called stroke fonts, which means that they are part of the software included with the DR Draw package. Using the SCALE function described in Section 5, you can change the size of stroke font text.

Screen and printed output of stroke font text look the same.

Text Style

Regardless of the current style, text appears in machine font as you type. If your current style for text is one of the stroke fonts, DR Draw displays a bouncing extent to show how much space the string will occupy. When you press the DONE key, DR Draw rewrites the string in the current font style.

Font Library

DR Draw offers you a library of twelve stroke fonts. Table 6-1 lists the menu names and the defaults for the stroke fonts.

Table 6-1. Default Stroke Fonts

<i>Menu Name</i>	<i>Default Font</i>
Simplex	Simplex Roman
Complex	Complex Roman
Italic	Triplex Italic

Appendix A contains samples of all the stroke fonts and tells you how you can replace default fonts with others from the library.

Changing Style

For more information on changing style, see the subsection on **STYLE** in Section 4 and the description of the **STYLE** function in Section 5.

Zooming on Text

If you use **ZOOM IN**, **ZOOM OUT**, or **ZOOM FULL** on a picture file that combines machine font text and another element (for example, a polygon), the polygon changes in size, but the text does not. Zooming also changes their relative positions and can cause the polygon to overlap the text.

When you use one of the **ZOOM** functions on a picture file that combines stroke font text and other elements, everything enlarges or reduces equally. The relative positions remain the same.

Section 5 describes the **ZOOM** functions.

Recommended Procedure

You might make a practice of immediately changing machine font text to one of the stroke fonts. If you do, your printed output matches what you see on your display screen, and you can use the **ZOOM** functions without affecting the relationship of the design elements in your picture file.

End of Section 6

Appendix A

FONT LIBRARY

INTRODUCTION

DR Draw's font library allows you to select from 12 stroke fonts, including serif and sans-serif Roman fonts, as well as italic, script, Greek, and gothic fonts.

COPY YOUR DISKETTE

The distribution diskettes that you receive with DR Draw include the font library diskette. Make a working copy of the library diskette before you use the font library. Store the original library diskette in a safe place in case you need to make copies in the future.

The *Supplement* tells you how to copy a diskette.

PROGRAM DISKETTE AND DEFAULT FONTS

Your DR Draw work diskette contains three font files, named DRAW.BIN, FONTB.BIN, and FONTC.BIN. These files correspond in the following manner to the three stroke font selections in the Style Submenu for the TEXT design element:

- If you PICK the Simplex submenu selection, DR Draw uses the font that is named DRAW.BIN.
- If you PICK the Complex submenu selection, DR Draw uses the font that is named FONTB.BIN.
- If you PICK the Italic submenu selection, DR Draw uses the font that is named FONTC.BIN.

When you receive DR Draw, the three font files on your program diskette contain DR Draw's three default fonts: Simplex Roman, Complex Roman, and Triplex Italic. You can retain the defaults, or you can replace Complex Roman and Triplex Italic fonts with selections from the font library.

Table A-1 lists the font filenames on the program diskette, their corresponding submenu selections, and the default fonts.

Table A-1. Font Files, Submenu Selections, and Defaults

<i>Filename</i>	<i>Submenu Selection</i>	<i>Default Font</i>
DRAW.BIN	Simplex	Simplex Roman
FONTB.BIN	Complex	Complex Roman
FONTC.BIN	Italic	Triplex Italic

For information on changing fonts, refer to "Changing Fonts" in this appendix.

FONT LIBRARY FILES The font library diskette contains twelve font files, including files for the three default fonts. Table A-2 lists the fonts and their corresponding filenames on the font library diskette:

Table A-2. Font Library Files

<i>Font Name</i>	<i>Filename</i>
Simplex Roman	SIMPROM
Complex Roman	COMROM
Duplex Roman	DUPROM
Indexical Roman	INDROM
Triplex Italic	TRIITA
Indexical Italic	INDITA
Gothic Italic	GOTITA
Simplex Script	SIMSCR
Complex Script	COMSCR
Simplex Greek	SIMGRE
Complex Greek	COMGRE
Indexical Greek	INDGRE

Figure A-1 shows the word Draw in the four Roman fonts. Note that the size of the characters and the letter spacing differ from one font to the next.

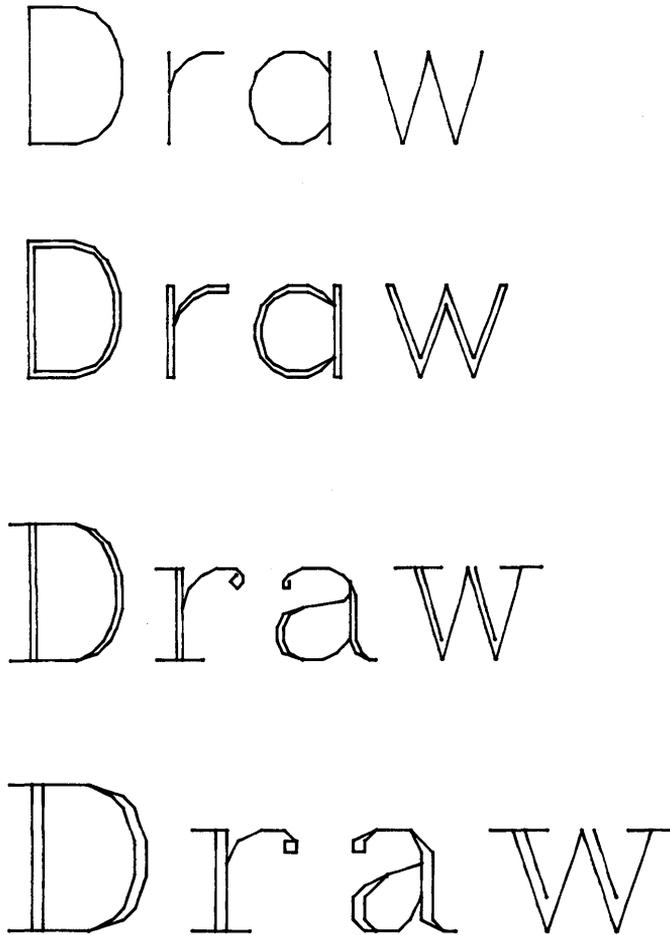


Figure A-1. Illustration of the Four Roman Fonts

“Font Character Sets” in this appendix shows the full character set for each font.

CHANGING FONTS

To replace default fonts with fonts from the library, you must use operating system commands.

If you are using DR Draw, return to the Main Menu, and PICK the EXIT function.

When you see the operating system prompt, you can use your operating system's file copying command to copy font files from the library diskette to your work diskette. In most cases you will place the work diskette in the A drive and the library diskette in the B drive. Then copy the font file you want from the library diskette, renaming it to FONTB.BIN or FONTC.BIN.

When you copy the font files, remember to include the filetype for the file on the library diskette. Table A-2 does not list filetypes because they can vary.

For detailed information on file copying, refer to your operating system manual.

**STYLE SUBMENU
FOR TEXT**

Replacing default fonts with fonts from the library does not change the Style Submenu for the TEXT design element. The submenu still lists the stroke font styles as Simplex, Complex, and Italic.

The submenu selection Simplex always produces text in the font Simplex Roman. Do not try to change the font file called DRAW.BIN.

The submenu selection Complex always uses the font file named FONTB.BIN. Although the default font for FONTB.BIN is Complex Roman, you can copy any font to the work diskette and rename it FONTB.BIN.

The submenu selection Italic always uses the font file named FONTC.BIN. Although the default font for FONTC.BIN is Triplex Italic, you can copy any font to the work diskette and rename it FONTC.BIN.

**FONTS AND
PICTURE
FILES**

When you recall a picture file, DR Draw remembers the Style Submenu selection you PICKed for each text string and uses the font currently in the corresponding font file on the program diskette.

For example, suppose you enter three text strings:

- “DR Draw,” using the submenu selection Simplex
- “Graphic Application,” using the submenu selection Complex
- “User’s Guide,” using the submenu selection Italic

If FONTB.BIN and FONTC.BIN contain the default fonts, “DR Draw” appears in Simplex Roman, “Graphic Application” appears in Complex Roman, and “User’s Guide” appears in Triplex Italic.

After you save the picture file, you EXIT from DR Draw. Using operating system commands, you copy font files to the work diskette, renaming them as follows:

- GOTITA to FONTB.BIN
- SIMSCR to FONTC.BIN

When you recall the picture file, “DR Draw” still appears in Simplex Roman, but “Graphic Application” now appears in Gothic Italic and “User’s Guide” in Simplex Script.

ERASING FONT FILES Do not under any circumstances erase any of the font files on your library diskette.

If you erase FONTB.BIN or FONTC.BIN from the work diskette and then PICK either the Complex or Italic sub-menu selection, DR Draw automatically uses Simplex Roman.

If you erase DRAW.BIN, you cannot start DR Draw. You see the message:

```
No font files, Press RETURN
```

Press the RETURN key to return to the operating system prompt.

RESTORING FONTS TO THE DEFAULTS If you change the font files in FONTB.BIN and FONTC.BIN, the changes are retained on your work diskette. If you want to restore the defaults, you can return to the operating system and copy the font files for Complex Roman and Triplex Italic from the font library diskette to FONTB.BIN and FONTC.BIN, respectively.

FONT CHARACTER SETS Each of the following figures shows a full character set for one of the available fonts. These examples are scaled equally so you can compare the size of the characters in the fonts.

Six fonts have numerals and basic punctuation marks. In these fonts, the keyboard pound sign (#) translates to a degree symbol, and the left and right angle brackets (< and >) translate to opening and closing single quotes.

The remaining six fonts have no numerals or punctuation.

Note also that the Greek alphabet has no letters corresponding to the J and V keys.

AaBbCcDdEeFfGgHhIi
 JjKkLlMmNnOoPpQqRr
 SsTtUuVvWwXxYyZz
 1234567890°\$&*()
 - = + ; : , . / ? ' ' ' ' "

Figure A-2 Simplex Roman Character Set

AaBbCcDdEeFfGgHhIi
 JjKkLlMmNnOoPpQqRr
 SsTtUuVvWwXxYyZz
 1234567890°\$&*()
 - = + ; : , . / ? ' ' ' ' "

Figure A-3. Duplex Roman Character Set

AaBbCcDdEeFfGgHhIi
 JjKkLlMmNnOoPpQqRr
 SsTtUuVvWwXxYyZz
 1234567890°\$&*()
 - = + ; : , . / ? ' ' ' "

Figure A-4. Complex Roman Character Set

AaBbCcDdEeFfGgHhIi
 JjKkLlMmNnOoPpQqRr
 SsTtUuVvWwXxYyZz
 1234567890°\$&*()
 - = + ; : , . / ? ' ' ' "

Figure A-5. Indexical Roman Character Set

AaBbCcDdEeFfGgHhIi
JjKkLlMmNnOoPpQqRr
SsTtUuVvWwXxYyZz
1234567890°\$&()*
- = + ; : , . / ? ' ' ' "

Figure A-6. Triplex Italic Character Set

AaBbCcDdEeFfGgHhIi
JjKkLlMmNnOoPpQqRr
SsTtUuVvWwXxYyZz

Figure A-7. Indexical Italic Character Set

AaBbCcDdEeFfGgHhIi
 JjKkLlMmNnOoPpQqRr
 SsTtUuVvWwXxYyZz

Figure A-8. Simplex Script Character Set

AaBbCcDdEeFfGgHhIi
 JjKkLlMmNnOoPpQqRr
 SsTtUuVvWwXxYyZz
 1234567890°\$&*()
 — = + ; : , . / ? ‘ ’ ‘ ’

Figure A-9. Complex Script Character Set

ΑαΒβΗηΔδΕεΦφΓγΧχΙι
ΚκΛλΜμΝνΟοΠπΘθΡρ
ΣσΤτΥυ ΩωΞξΨψΖζ

Figure A-10. Simplex Greek Character Set

ΑαΒβΗηΔδΕεΦφΓγΧχΙι
ΚκΛλΜμΝνΟοΠπΘθΡρ
ΣσΤτΥυ ΩωΞξΨψΖζ

Figure A-11. Complex Greek Character Set

Α α Β β Η η Δ δ Ε ε Φ φ Γ γ Χ χ Ι ι
 Κ κ Λ λ Μ μ Ν ν Ο ο Π π Θ θ Ρ ρ
 Σ σ Τ τ Υ υ Ω ω Ξ ξ Ψ ψ Ζ ζ

Figure A-12. Indexical Greek Character Set

Α α Β β C c D d E e F f G g H h I i
 J j K k L l M m N n O o P p Q q R r
 S s T t U u V v W w X x Y y Z z

Figure A-13. Gothic Italic Character Set

End of Appendix A

Appendix B

Additional DR Draw Messages

INTRODUCTION

This appendix describes error messages that you might see while starting or using DR Draw.

STARTING DR Draw

When starting DR Draw, you might see one of the following messages.

No DRMSG80.TXT, Press RETURN

If your system has an 80-column display monitor, you cannot start DR Draw without a file called DRMSG80.TXT on your work diskette.

If you see this message, the file DRMSG80.TXT is not on your work diskette. Use your operating system's file-copying command to copy the file from the distribution diskette you received with your DR Draw package to the work diskette.

No DRMSG40.TXT, Press RETURN

If your system has a 40-column display monitor, you cannot start DR Draw without a file called DRMSG40.TXT on your work diskette.

If you see this message, the file DRMSG40.TXT is not on your work diskette. Use your operating system's file-copying command to copy the file from the distribution diskette you received with your DR Draw package to the work diskette.

DRAW.BIN not SIMPROM.nnn; Press RETURN

A font file other than SIMPROM.nnn has been copied and renamed to the file DRAW.BIN on the DR Draw work diskette. The font named DRAW.BIN must be Simplex Roman. The nnn in the above example represents a filetype.

Press the RETURN key, and copy the file SIMPROM.nnn from the font library diskette. As you copy the file, rename it to DRAW.BIN.

No graphics input; Press RETURN

You see this message if one of the following conditions exists.

1. The GSX program has not been installed. GSX must be installed before you can start DR Draw.

Some systems install GSX automatically when you start DR Draw. In other systems you must install GSX before you can start DR Draw. Refer to the *Supplement* if you are not sure which type of system you have.

2. In the ASSIGN.SYS file on your work diskette, the device driver for your display monitor is either missing or incorrectly specified.

The file specification of the monitor driver in the ASSIGN.SYS file is preceded by a logical device number from 01 to 10.

Ensure that the ASSIGN.SYS file on the work diskette meets the following requirements:

- a. A logical device number from 01 to 10 precedes the filename of the monitor device driver.
- b. The filename preceded by the logical device number from 01 to 10 corresponds to a monitor device driver file on the work diskette.

USING DR Draw

While using DR Draw, you might see one of the following messages.

`Cannot add more elements, press DONE`

DR Draw has a limit of two hundred design elements per picture file. You see this message if you try to add more than two hundred elements.

`Not enough space on disk, press DONE`

When you are in a picture file and try to use the CREATE, RECALL, or SAVE function, this message appears if insufficient space exists on the diskette where the file will be stored. The storage space required varies, depending on the function you PICK.

■ **CREATE:** The diskette must have at least 12 Kilobytes of available space, in addition to the size of the file. The following two examples illustrate how this restriction applies to the CREATE function.

1. If the diskette has 10 Kilobytes of space when you PICK the CREATE function, DR Draw displays the message and does not permit you to start the new file. You can either delete unwanted files from the diskette or use a diskette with sufficient space.
2. If the diskette has 15 Kilobytes of available space, you can start the new file and add design elements that consume 3 Kilobytes of space before DR Draw displays the message and does not allow you to add more design elements.

Save the file, then delete unwanted files from the diskette or copy the file to a diskette with sufficient space.

- **RECALL:** When you recall a file, DR Draw produces an active picture file by making a copy of the file on your diskette. Therefore, the minimum available space on the diskette must be 12 Kilobytes plus the size of file you are recalling. However, if you intend to add design elements to the file, the diskette must have space for the new design elements, in addition to the size of the file and the 12 Kilobyte minimum.

If you cannot recall the file or if the diskette has insufficient space for additional design elements, return to the operating system. You can delete unwanted files from the diskette or copy the file to a diskette with sufficient space.

- **SAVE:** When you SAVE a file to another drive, the diskette on that drive must have available space equal to 12 Kilobytes plus the size of the file you are saving.

To see how much space remains on the diskette and to check the size of a picture file, use the appropriate operating system commands. For more information on the commands, refer to your operating system manual.

Bad drive identifier, press DONE

DR Draw displays this error message when you use a drive identifier for a drive that does not exist on your system. This situation can arise when you PICK the CREATE, RECALL, SAVE, DIRECTORY, and OUTPUT functions.

For example, if your system has only two drives, A and B, and you type

J:CHART

in response to the "Picture filename?" prompt, DR Draw displays the message.

End of Appendix B

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NOTES

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Instructions for Customizing DR Draw™

Dear OEM,

When you prepare DR Draw™ for distribution, you will do the following:

- preconfigure a set of device drivers on the DR Draw program diskette
- modify the text file for the GINSTALL program to reflect the device drivers you distribute
- edit the README.DOC file on the DR Draw program diskette

Because of these changes, you need to prepare a user's guide supplement to tell the user how to install DR Draw. To assist you in preparing a supplement, enclosed is a copy of the DR Draw Graphic Application User's Guide Supplement for CP/M-86® and Concurrent CP/M™ on the IBM® Personal Computer. You need to modify its contents to reflect your target computer and diskette configuration for DR Draw. The attached technical note identifies the sections and subsections of the supplement that might change.

If you have questions about the technical note or about DR Draw in general, please contact your DRI Account Manager or the Technical Support Specialist in the DRI regional office nearest you. If they are unable to answer your questions, they will contact our Pacific Grove office for additional support.

Thank you for your purchase of DR Draw. We look forward to working with you on future DRI software products.

Sincerely,
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