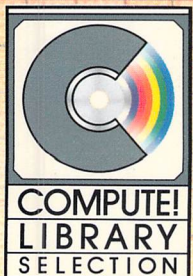


Using Deluxe Paint II

Steven Anzovin

Tap all the power of the premiere graphics program for the Commodore Amiga and Apple IIGS personal computers.



Using *Deluxe Paint II*TM

Steven Anzovin

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Foreword

Within the Commodore Amiga and Apple IIGS, two of the most graphically powerful personal computers, lies enormous artistic potential. The machine on your desk may look like a personal computer—complete with keyboard, monitor, disk drive, and mouse—but that's just a disguise.

Inside that box waits a superb draftsman, a subtle watercolorist, a flamboyant pastel artist, a dazzling airbrush master—all of them waiting for the right opportunity to show their stuff.

That opportunity comes in the form of a 3½-inch disk labeled *Deluxe Paint II*. With this disk in the drive and your hand on the mouse, you can learn how to paint, sketch, shade, and draw impressive electronic art. It doesn't matter whether you're an accomplished artist, or haven't picked up a paint brush since your stick-figure days—you can produce interesting and rewarding work within hours. You don't need to have years of art training to enjoy *Deluxe Paint II's* capabilities and develop your own skills. But if you *are* artistic, trained and skillful in any number of media, you can delve into the new methods and techniques—and the new results—that computer art offers.

Learning *Deluxe Paint II* is what this book is about. Inside you'll find out how to create practical, workaday graphics ranging from illustrations to design. And you'll learn how to use the software to produce art for art's sake. Techniques are explained and demonstrated, and the results are reproduced in more than 100 figures, paintings, and drawings. You'll learn how to manage basic drawing with *Deluxe Paint II*, how to use one of the program's most powerful features—custom brushes—how to use color to best effect, how to paint, and how to create text. You'll also see how patterns and perspective are made simple with this state-of-the-art software.

This guide to *Deluxe Paint II* takes you beyond the manual, giving you hands-on practice and countless ideas for your own art. *Using Deluxe Paint II* is the perfect companion for any Amiga or Apple artist.

Make use of it, and become a truly deluxe artist.

Acknowledgments

One of the pleasures of writing a book like this is thanking those who have helped in its conception. At Electronic Arts, Nan Dupont, Happy Keller, Steve Peterson, and Charlotte Taylor gave generously of their time and resources; thanks also to Electronic Arts for granting permission to reproduce clip art by EA artists. The staff at COMPUTE! Books was unfailingly helpful, especially Stephen Levy, Gregg Keizer, and Lee Noel, Jr. Several members of New York's AMUSE Amiga user's group provided examples of practical uses for *Deluxe Paint II*. Discussions with Amy Slaton of *Art in America* magazine clarified matters of computer art aesthetics for me. Thanks also to Martha Steffens of Apple Computer and the staff at American Business Products of Englewood, New Jersey. I'm especially grateful to my wife, who applied her sharp eye and ear to the manuscript and made numerous suggestions for improvement. Of course, any errors contained within are mine alone.

Above all, thanks to Dan Silva for writing a superlative program.

Steven Anzovin
March 1987

Introduction

Until a few years ago, computer art was the esoteric province of large animation production houses, university research centers, and a number of hardy individuals using frustratingly low-powered equipment and custom-written programs. Today all that has changed. Low-cost computers capable of beautiful, full-color graphics are now available to everyone. Foremost among the new graphics-oriented machines are Commodore's Amiga and Apple's new IIGS. These powerful, but easy-to-use computers have challenged software developers to create programs that fully exploit their capabilities.

In November 1985, Electronic Arts unveiled a new art program for the Amiga—*Deluxe Paint*, the flagship program in EA's Deluxe Creativity Series. *Deluxe Paint*'s speed, flexibility, ease of use, and range of features gave it much of the power of custom art programs running on high-priced graphics workstations. It was an instant bestseller and won several awards. A year later an enhanced version of *Deluxe Paint*—*Deluxe Paint II*—was released for the Amiga, and in May 1987 a version of the program was made available for the Apple IIGS.

Combining your Amiga or Apple IIGS with *Deluxe Paint II* will furnish you with a versatile system for producing sophisticated computer art. But creating art isn't merely a matter of owning the right tools. Having a set of cold chisels doesn't automatically make you a master sculptor. You need to set a goal, conceive of an image that communicates an idea or emotion, and then learn the techniques necessary to create that image.

Learning *Deluxe Paint II* techniques is what this book is all about. Within it you'll find information on how to use the many features of *Deluxe Paint II* for practical ends—for business graphics, desktop publishing, illustration, design, and more—as well as for creating art purely for its own sake. *Using Deluxe Paint II* will help you through the transition from *Deluxe Paint II* owner to *Deluxe Paint II* artist.

How to Use This Book

As you set out to become a *Deluxe Paint II* artist, the first thing to do is to master the fundamentals. Knowing the basics will help you get the most out of *Using Deluxe Paint II*. If you haven't done so

already, carefully read the operating manual that came with your Amiga or Apple IIGS. This book assumes that you're familiar with common computer terms such as *byte*, *memory*, and *disk drive*, and that you understand the basic operations of your machine, such as starting the computer, copying disks and files, and the like.

You also should read the *Deluxe Paint II* manual and work through the manual's excellent tutorials. *Using Deluxe Paint II* is not a substitute for the manual, but a companion to it. This book is not meant as an attempt to cover every feature of this complex program. Instead, it focuses on ways you can use *Deluxe Paint II* for personal enjoyment and, if you're a professional artist, ways you can use it as a tool for increasing your creative productivity.

The discussions of *Deluxe Paint II* features generally apply to both the Amiga and Apple versions. As far as graphics capabilities are concerned, the versions are nearly identical. But in some areas, mainly those relating to the hardware and operating systems of each computer, there are significant differences. These differences are spelled out in the text.

Artist Not Required

One thing that's not taken for granted in this book is that you have had previous training in art technique. *Deluxe Paint II* is so easy to use that you can produce interesting and rewarding work within hours, even if you haven't drawn since grammar school. Many people who are afraid to draw or who believe they can't draw have found it easier to overcome "art anxiety" using a computer than using pencil and paper. *Deluxe Paint II* takes care of the tasks that seem so daunting to beginning artists, like drawing straight lines, mixing colors, and putting pictures into perspective. And if you make a mistake or don't like what you see, you can just clear the screen and try again without wasting a single sheet of paper or emptying expensive tubes of paint. More important than technical skill or training are a willingness to take risks and the determination to really look at the world—or the worlds of your imagination—and draw what you see there.

What's in This Book

Using Deluxe Paint II is organized to serve both novices and experts. A newcomer to computer art and *Deluxe Paint II* can read from front to back, progressing from the basics to advanced topics. More experienced artists can skip directly to chapters covering areas of special interest.

Chapter 1 covers the general theory and aesthetics of computer art. Chapter 2 introduces you to the *Deluxe Paint II* environment and relates the program to other art tools you may have used. Chapter 3 explains basic drawing techniques. As a unit, these first three chapters provide basic insights into *Deluxe Paint II* that will help you to get started with your own work.

The following chapters examine in more detail the program's major features—the custom-brush tool, the color palette, the painting tools, drawing and painting aids, the text tool, pattern making, and the perspective tool. Tutorials and step-by-step examples are included to help you understand just how each feature works.

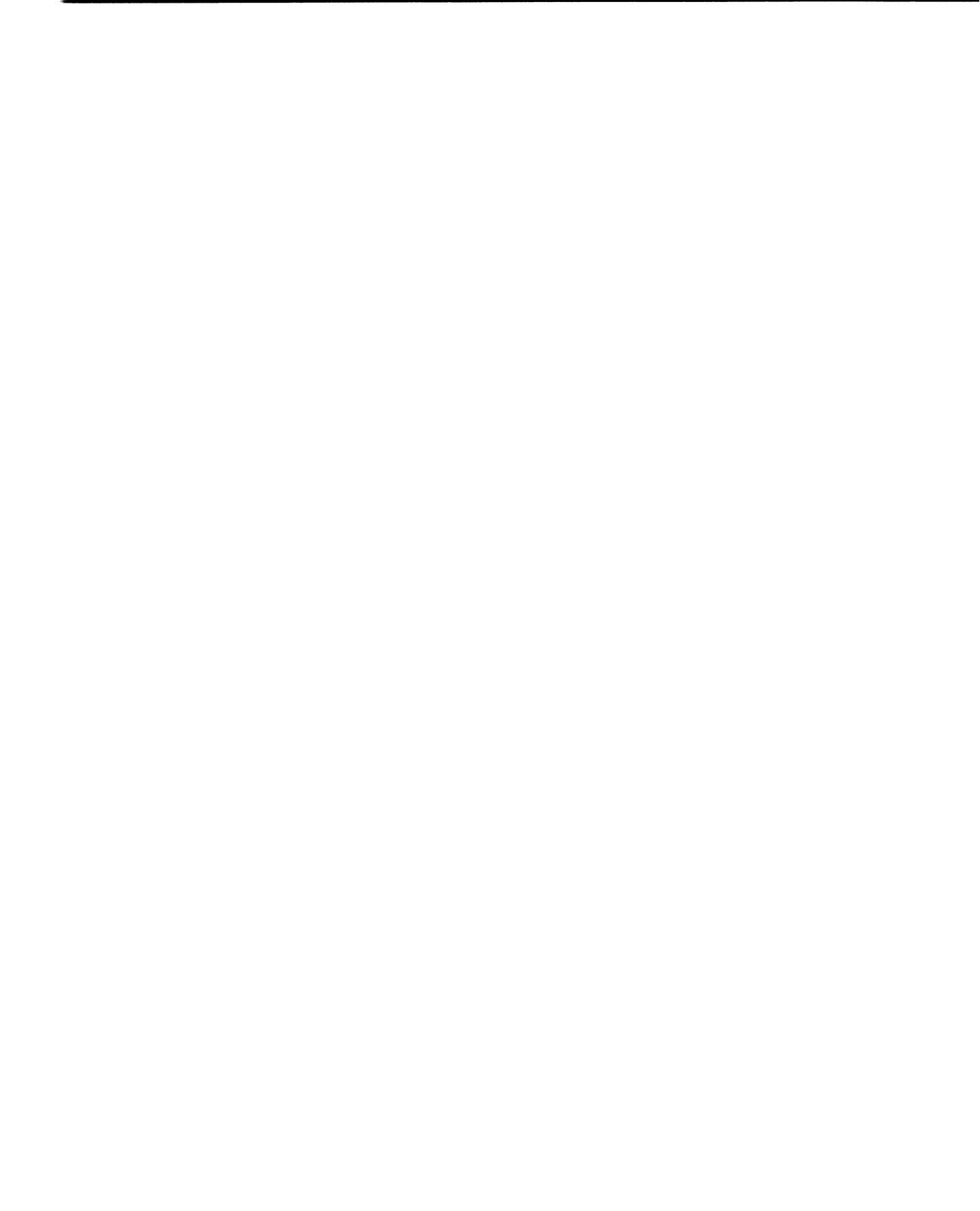
The illustrations (all created with *Deluxe Paint II*) show how each program function can be applied. You may find it helpful to work through some of the drawings step by step on your own screen, reproducing them as closely as you can. Or you may wish to try out the techniques illustrated using your own material. The more complex illustrations are offered as examples not only of technique, but also of the level of sophistication that *Deluxe Paint II* graphics can achieve.

Keep in mind, however, that the text and illustrations don't even begin to cover all the visual styles and techniques—traditional and still-to-be-invented—that are possible with *Deluxe Paint II*. Experiment on your own, develop your own style and method of working, and apply *Deluxe Paint II*'s many capabilities to your own graphic arts needs. As you work with *Deluxe Paint II*, you'll discover that this program is one of the very best inspirations to graphics creativity yet devised.



CHAPTER 1

Behind *Deluxe*
Paint II Graphics



H

uman beings began to draw and paint long before they began to write, and we all have within us the desire (perhaps secret and unexpressed) to communicate in pictures. As children we all love to draw; we begin drawing only a little while after we start to talk. The two processes, speaking and drawing, have a lot in common: They are ways of communicating in symbols, combining physical and mental abilities in a contest to measure your insights against the conditions of the real world. And both speaking and writing can be brought up to the level of art.

But few of us grow up to be artists. The traditional ways of making art—drawing, painting, sculpture, and printmaking, not to mention practical graphic communication like drafting and graphic design—are skilled crafts, demanding time and patience to learn. Becoming good at creating art takes a long apprenticeship, an apprenticeship most of us feel we cannot afford. Many potential artists also fear that they lack the talent or inspiration to make worthwhile art. Rather than fail, they don't make a start. Yet we still take pleasure in drawing and sketching when the opportunity arises—a map, a diagram, or a doodle—and wish that we could do more.

You may think that computer graphics is an area of art which requires especially arcane knowledge. Surprisingly, the computer offers an easy and fun way to begin making art again. Combining the right computer, such as the Commodore Amiga or the Apple IIGS—computers designed with graphics in mind—with the right graphics software, such as *Deluxe Paint II*, yields a new art medium that's easier to learn, more forgiving of errors, and more conducive to experimentation than any other.

Afraid to touch brush to canvas for fear of ruining the picture with your first mark? With a computer, you needn't be. No mark or action is irrevocable; you can erase what you've done at any point and start afresh. Or you can save only the parts you like and trash the rest—without wasting a single piece of paper.

Lack the skill to draw a straight line? Don't worry—no one can draw a really straight line freehand, anyway. But the computer

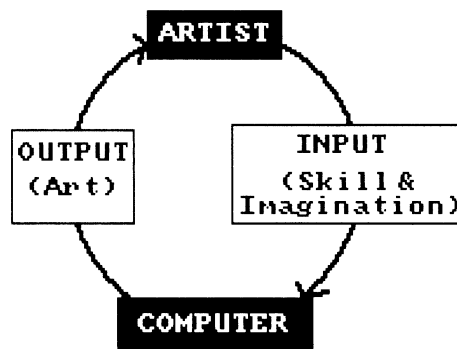
can—as well as draw perfect circles, ellipses, and squares; duplicate any shape exactly; mix colors automatically; put scenes into perspective; and much more.

Feel that you don't have the necessary talent or inspiration? Don't worry about talent; if you're enthusiastic and interested, you're ready to tackle the adventure. If you do have special talent, you'll soon know it. Even if you don't (and it's unlikely that you won't discover *some* aptitude), there is still plenty of useful work you can do. Developing skills is largely a matter of determination, which can be learned. As Thomas Edison said, genius is 10 percent inspiration and 90 percent perspiration. You truly don't know what you can do until you work hard at it. The computer, by making it easier to get the picture done, will release your imagination, giving you the freedom to experiment and grow.

Remember also that not all graphic communication is fine art. There are scores of practical applications, from architectural drafting to zipper design, that are more easily and more effectively done on a computer.

Computer graphics offers special advantages to the practicing artist. You needn't feel you are "selling out" by using a computer in your work. Anything that makes your work easier, and at the same time opens new creative areas for exploration, should be welcome. It's important to view the computer not as the end point of the art-making process, but as one step on the way. For example, the computer offers a quick way to plan pictures for traditional media. You can lay out your painting, illustration, print, or advertising

Figure 1-1. The Art System



comp, rearranging the layout until it looks right and devising a color scheme from over 4000 readily available colors. You can build libraries of pictures to reuse whenever you need them and then can translate them into paper, photographic, or video form. You'll find that the computer, just as much as any other art tool you own, will become part of your total system for making art (Figure 1-1). You, the artist, provide the skill and imagination; the computer helps you craft the product—the art. In turn, you look at what you've done, hone your skills and ideas accordingly, and start the process over again.

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The Synthetic Image

We all know what paintings, prints, and photographs look like, and we all have at least some idea of what goes into making them. Anyone who has been exposed to art quickly develops strong likes and dislikes. For instance, you may love Manet's work, but think Renoir's is too sugary. A whole branch of philosophy, *aesthetics*, exists to help you make and support these judgments.

Do the same familiar visual standards apply to computer art? Is computer graphics just an extension of traditional practices—another way to paint—or is it, as some artists claim, qualitatively different, a revolutionary way of making art and looking at the world? The term *synthetic image* has been applied to the new computer art, implying that graphic images created on a computer have aesthetic properties never seen before.

The jury is still out on whether all the old standards apply. The body of computer art that exists is too small, and the fund of experience gathered by computer artists is too meager, to give a definitive answer to that question. The extent and limits of the field have yet to be discovered, leaving plenty of room for you to make your mark on it, if you so choose.

Certainly, some aspects of art making don't change, no matter what medium or technology you're using. The act of painting a landscape remains a metaphor of and communication about your artistic perception of a scene, regardless of whether it's done in *plein air* with oils or in an air-conditioned office with your computer; the picture still must meet the fundamental requirements of honest purpose, clear technique, and effective communication.

But in other aspects, the computer is having an unprecedented impact on the way the artist works—especially as sophisticated but low-cost hardware and software become available to every artist. That's because the computer is not merely another medium, like paint or pastel. It's also a set of powerful tools, a translator, and an assistant, with some amazing abilities and some notable shortcomings. The computer sets very plain limits, defined by the technology available and the "personality" of the software. For example, at the present level of personal computer technology, you can't make a picture with the subtle detail and depth of color of an oil painting or even of a good photograph. And if your graphics program lacks some essential feature, such as being able to fill any area with a pattern of your own creation, then you have to do without that tool. One of the best things about the Amiga and the Apple IIGS is that they were expressly designed with graphic art in mind, and represent the most advanced art technology available in

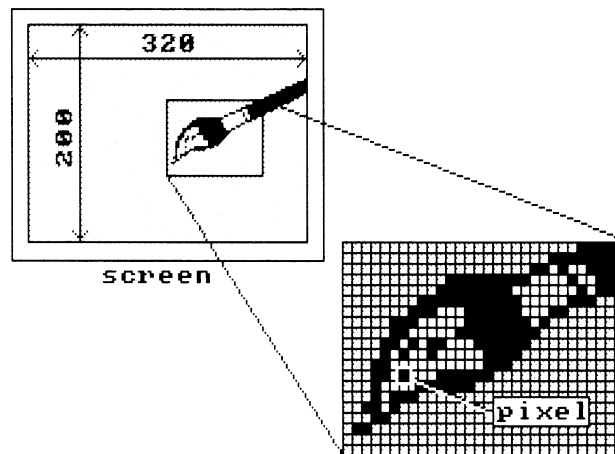
personal computers. And in *Deluxe Paint II*, you'll find the most comprehensive graphic toolkit, with the best-thought-out working environment, available in graphics software today.

Painting with Pixels

To gain a better understanding of the kinds of images that *Deluxe Paint II* and your computer can create, let's start by looking at how the Amiga and Apple IIGS make pictures.

All computer displays—that is, screen images—are composed of picture elements, called *pixels* for short. The pixel is the smallest possible dot the computer can display—the fundamental particle of computer graphics. On the screen, pixels are arrayed in a grid, usually specified as a number of pixels across by a number of pixels down. Figure 1-2 shows a standard Apple IIGS or Amiga screen composed of 320 pixels across by 200 down. The computer can make each pixel black, white, or any of various available colors in between. Computer images, such as the brush in Figure 1-2, are no more than fields of pixels shaded to look like some object. On the most basic level, when you draw on the screen, you're painting with pixels.

Figure 1-2. Pixels



Defining Resolution

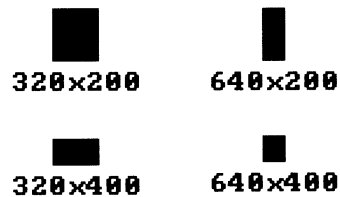
Resolution is, in essence, the "graininess" or coarseness of a computer image. It's defined by the size and shape of the smallest pixel that can be generated by the computer. In Figure 1-3, you can see

the various pixel sizes and shapes that are available on the Apple IIGS and the Amiga.

Deluxe Paint II on the Apple IIGS has access to two resolutions: 320×200 (medium resolution) and 640×200 (high resolution).

Deluxe Paint II on the Amiga has access to four resolutions: 320×200 (low resolution), 320×400 (interlace), 640×200 (medium resolution), and 640×400 (high resolution). The 640×200 resolution has twice as many pixels as the 320×200 resolution, and so can yield images with twice the detail. The Amiga's hi-res mode (640×400) has four times as many pixels as the lo-res mode, yielding four times the resolution.

Figure 1-3. Pixel Sizes



If you want to be precise when talking about resolution, you'll say, "This picture was made in the Apple IIGS's 640×200 resolution," or you might say more casually, "This was painted in low res," meaning the Amiga's 320×200 resolution. *Deluxe Paint II*

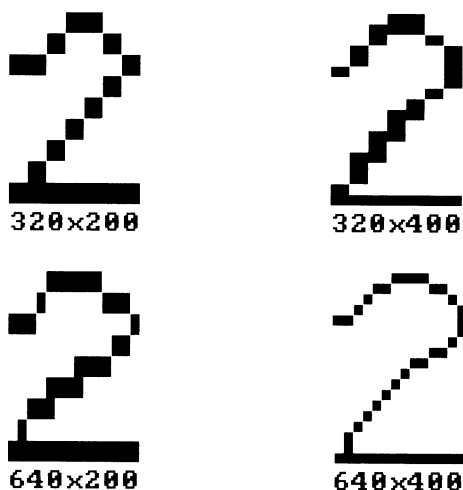
lets you work in any of these resolution modes, so you can choose the one that best suits the task at hand. All the pictures in this book, for example, were created in the 320×200 resolution mode.

The unaided human eye cannot resolve picture elements smaller than about $1/10$ millimeter. Anything smaller than that can't be picked out as an individual object by the naked eye. The graininess of media such as paint or photographic emulsion is as fine or finer than this, so resolution isn't an issue when working with these media; they can create detail far finer than the eye can resolve.

Personal computers, including the Amiga and the Apple IIGS, can't produce a screen resolution even approaching the resolving limit of your eyes. Computer images look coarse and blocky—more so in the lower resolution modes, but still quite noticeable in the higher ones. Diagonals and curves are particularly jagged, as you can see in Figure 1-4. This phenomenon is known as *staircasing*, *aliasing*, or simply *the jaggies*. This is what gives computer images that familiar digitized look.









Resolution modes differ not only in the size and number of pixels that can be displayed, but also in the shape of the pixel itself. The ideal pixel is square, so that its proportions are constant no matter how it's rotated. (Rotating images is one of those tasks that is so difficult with traditional ways of creating art and so easy

Figure 1-4. Resolutions



using *Deluxe Paint II.*) Square pixels make curves and diagonals look smoother. Figure 1-5 shows how a numeral drawn in the 320 × 200 resolution mode changes size and shape when translated into other resolutions. Rotating the numeral in the 320 × 400 and 640 × 200 modes radically changes its proportions. The 320 × 200 and 640 × 400 modes create the least rotational distortion because they have nearly square pixels.

Figure 1-5. Resolution Distortions

Resolution	90° Rotation
 320x200	
 320x400	
 640x200	
 640x400	

The state of the technology being what it is, you'll have to accept the distortions and crudeness of computer images for the time being. You may be familiar with the crisp, fine-edged look of paint, ink, and photographs, so this lack of subtlety can be difficult to get used to. There are various ways to compensate for the limits of your computer's resolution. Some of these techniques are discussed later in this book. The best approach is to accept the currently limited nature of the computer image and make the most of it. There's an unlimited amount of useful and enjoyable work which can be done with the tools available.

A note on the Amiga resolution modes. When using the 320×400 and 640×400 modes (instructions for doing that are in the next chapter), you'll notice a definite flicker on the screen, especially between adjacent contrasting areas and along horizontal lines. This is caused by *interlacing* (that is, the Amiga displays alternate horizontal lines of pixels to gain more vertical resolution). The interlaced modes are more difficult to work with when line drawing; your eye automatically tries to follow the flicker and gets tired. The flicker isn't as much of a problem when you're working with broad areas of color. If you can't stand the flicker, avoid the interlaced modes or get a special kind of monitor, called a *long-persistence* monitor, which doesn't show the flicker. These monitors, available from Commodore and well-known manufacturers such as Sony, Mitsubishi, and Electrohome, are expensive, but can be worthwhile if you must work in the interlaced modes.

Color

The Apple IIGS and the Amiga can both generate a galaxy of colors, more than any other personal computers. They can display 16 values of each of the three hues that are the primary colors of video displays: red, green, and blue. These colors mix to yield a total palette of $16 \times 16 \times 16$, or 4096, colors. *Deluxe Paint II* gives you complete access to this panoply of color, from pure primaries to subtle pastels and natural flesh tones.

Using *Deluxe Paint II*'s palette-control features (discussed in Chapter 5), you can make any choice of colors from the palette, but because of inherent limitations of the Amiga and Apple IIGS you cannot display all 4096 colors at once. Table 1-1 summarizes the number of colors available in each resolution mode.

Table 1-1. Available Resolutions and Colors—Apple II and Amiga

Computer	Resolution Mode	Available Colors	Notes
Apple IIGS	320 × 200 (medium res)	16	
	640 × 200 (hi res)	4	
Amiga	320 × 200 (lo res)	32	
	320 × 400 (interlace)	32	Interlaced
	640 × 200 (medium res)	16	
	640 × 400 (hi res)	16	Interlaced; <i>Deluxe Paint II</i> requires 1 megabyte RAM to display all 16 colors

You'll notice that the number of colors tends to decrease as the resolution increases. This is because the higher resolutions require more memory to display—after all, there are more pixels—and that leaves less room for color information. Even so, you'll still have a wide selection of colors for your graphics needs.

Now that we've covered these basic computer graphics concepts, let's take a closer look at *Deluxe Paint II* itself.

CHAPTER 2

The *Deluxe Paint II*
Environment



In this chapter, you'll take a broad look at the working environment that *Deluxe Paint II* creates—the type of program it is, the way you work with it, and the general characteristics of the pictures you can create with it. If you're an experienced *Deluxe Paint II* user, you may want to skip ahead now to the later chapters covering special topics.

What Is *Deluxe Paint II*?

Deluxe Paint II is what's commonly known as a *paint program*, a general-purpose software tool for creating computer graphics of any kind. This includes fine art and most kinds of design work: fashion and theatrical design, architectural and product renderings, book and magazine illustration, business graphics, and desktop publishing.

Deluxe Paint II is primarily a *bitmap editor*, meaning that it creates, manipulates, and saves pictures on a pixel-by-pixel basis. It's not primarily a *structured drawing program* or an *object-oriented program* that creates, manipulates, and saves objects and shapes (that's what most computer-aided drafting and design programs are). But *Deluxe Paint II*, as you'll see in the following chapters, does have some of the characteristics of a structured drawing program, and can perform many of the same tasks.

To be easy to learn and operate, a good paint program should incorporate electronic analogues of traditional painting and drawing techniques. With *Deluxe Paint II*, you'll still wield brushes, draw lines, mix colors on an artist's palette, and work on a page. You'll instantly recognize the terminology that *Deluxe Paint II* uses, and be able to orient yourself by familiar landmarks. But a paint program should also offer more than a mere analogy to tradition, and *Deluxe Paint II* does that as well. Many *Deluxe Paint II* tools and features have no real correspondence to traditional techniques. These are the most exciting aspects of *Deluxe Paint II* and will be covered in depth in subsequent chapters.

The *Deluxe Paint II* Canvas

At this point, make sure you've read your computer's operating manual and the first section of the *Deluxe Paint II* manual, as well. When you feel confident that you can handle disks and drives, the *Deluxe Paint II* key disk, the mouse, and starting a program, then move ahead.

In computer art, the monitor screen is your canvas, the field of action. Let's take a look at the *Deluxe Paint II* canvas now.

Load *Deluxe Paint II*. If you're using an Amiga, choose OK from the Screen Format Box (we'll discuss screen formats later in this chapter); the IIGS loads the program automatically. In a moment you'll see a screen like the one in Figure 2-1 (Amiga) or Figure 2-2 (Apple IIGS).

This is *Deluxe Paint II*'s working area. As befits a program for artists, *Deluxe Paint II* lets you control many of the program's functions through a set of pictographs, called *icons*. Working with these icons is much faster than reading words and typing commands, and you'll find the *Deluxe Paint II* graphics-based environment quick and easy to learn. In most cases, you work on the screen by moving a pointer around with the mouse. To choose a tool, you simply position the pointer over an icon and click the Apple IIGS's single mouse button or the Amiga's left mouse button.

Try that now. First, hold down the mouse button (the left button on the Amiga) and move the crosshairs around on the main drawing area—the page. You're drawing with a one-pixel-sized brush; you can see it in the center of the crosshairs.

A *brush* is an image of any kind, from a pixel-sized dot to a screen-sized picture, that leaves a mark on the screen. When you load *Deluxe Paint II*, it automatically provides you with that small brush and a field of black (Amiga) or white (IIGS) to work on. Cover the page with scribbles until you're comfortable with the action of the brush. When you want to stop drawing, let up on the mouse button. You can then move the crosshairs to a new location without leaving a mark and start drawing again.

Now move to the right-hand border of the screen. There you'll see the *Deluxe Paint II* toolbox. This is where the drawing and painting tools are—the ones you'll use constantly in your work. As you move the crosshairs into the toolbox area, they turn into a pointer. Position the pointer over the CLR (CLEAR) box and click the mouse button. Instantly, the scribbles you made vanish, and the page is blank again. You've just experienced one of the chief pleasures of *Deluxe Paint II*—the ability to effortlessly erase your work at any time.

Figure 2-1. Amiga *Deluxe Paint II* Screen

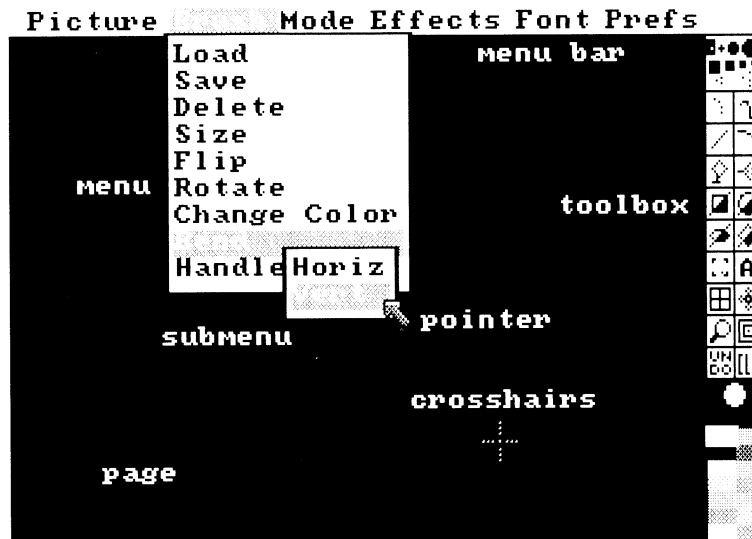
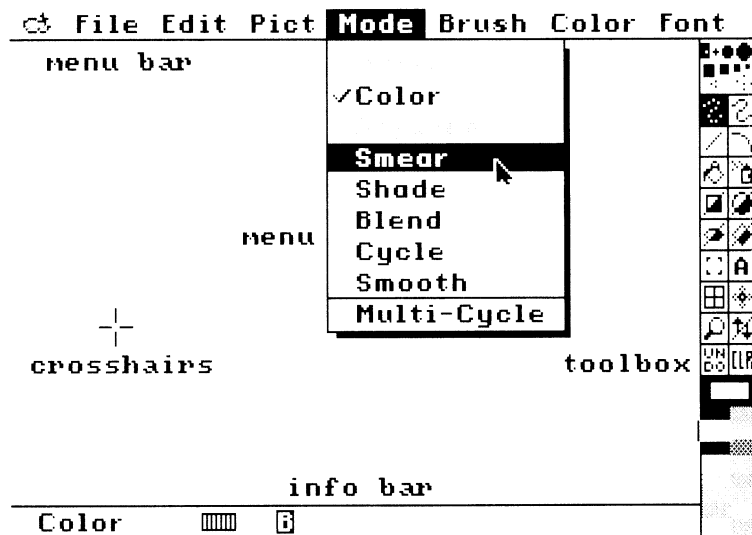


Figure 2-2. Apple II *Deluxe Paint II* Screen



These few simple techniques—moving a brush on the drawing page and selecting a tool from the toolbox—are the most important and the most common. Know these and you know enough to do useful work with *Deluxe Paint II*.

Along the top of the screen, you'll see the *menu bar*. This gives you access to *Deluxe Paint II* functions that modify a tool or that can't easily be represented by a picture. Go to the menu bar and pull down a menu now. (If you have an Amiga, use the right mouse button for menu operations.) The one shown in Figures 2-1 and 2-2 is the Brush menu. A list of options for modifying custom brushes is contained in the menu. (Note that the Amiga has provisions for submenus, but the Apple IIGS does not.) Each menu option is highlighted as you move the pointer over it; select any menu option by clicking on it.

The Amiga menu bar shows additional kinds of information relating to the *Deluxe Paint II* function you're using. For example, it tells you when the stencil function is on and what kind of fill feature is currently active. (Stencils are discussed in Chapter 7; the fill function, in Chapters 3 and 9.) On the IIGS, this information is displayed in the Info bar along the bottom of the screen.

Now is a good time to practice selecting tools from the toolbox and to take a look at all the menu options. You'll be using most of these later, so get to know where everything is. Chapter 3 covers the basic drawing tools in more detail. And by the way, if you need more drawing room, you can turn off the toolbox and the menu bar by pressing the F10 key on the Amiga, or the 0 key on the Apple IIGS. Hide the IIGS Info bar by pressing the 9 key.

Choosing Resolutions: Style and Flexibility

Deluxe Paint II lets you choose from your computer's available resolutions by making selections from the Screen Format box. Let's return to that now by selecting the Screen Format option from the Picture menu (in the Apple IIGS version of *Deluxe Paint II*, the Picture menu is labeled *Pict*). If you have an Amiga, you'll see a box somewhat like the one in Figure 2-3. (The figure actually shows the box as it appears when you first boot the program. When you call the box later from the Picture menu, it looks a bit different.) Figure 2-4 shows the Apple IIGS Screen Format box. Such boxes are called *requesters* in Amiga argot, and *dialog boxes* in IIGS jargon. The Amiga's Screen Format box gives you access to the computer's available resolution modes and lets you select the number of colors

you want to use. The Apple IIGS Screen Format box gives you a choice between medium and high resolution. Click on the appropriate gadget to make your choices.

Figure 2-3. Amiga Screen Format Box

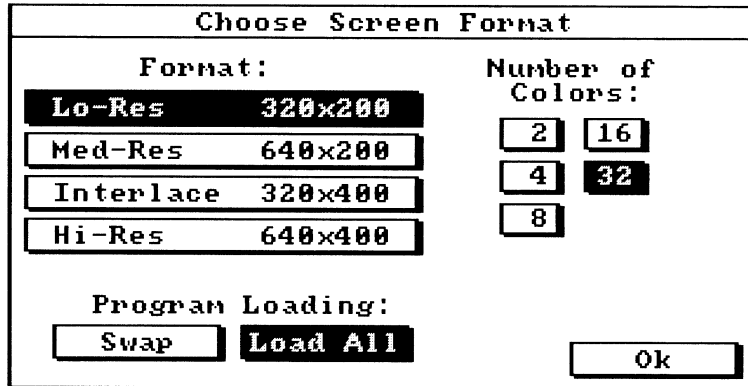
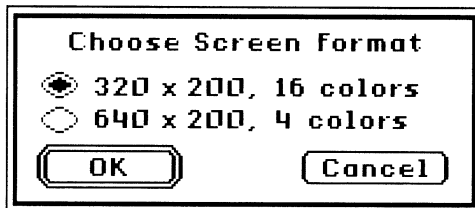


Figure 2-4. Apple II Screen Format Box



With the Amiga, you can switch on the fly from one resolution and number of colors to another as you work. This will change the size of your picture as well. For example, switching from the 320×200 resolution to the 640×200 will halve the width of your picture, because 640×200 pixels are half the width of 320×200 pixels. The picture will look as though it has been squeezed to the right by a hydraulic press.

If you've been using the maximum number of colors in the 320×200 mode, the number of colors available will diminish as well, either by one-half (Amiga) or by three-quarters (Apple IIGS). *Deluxe Paint II* automatically recalculates the palette as necessary, trying to accurately correlate the original picture's colors with the new.

Similarly, if you move from 640×200 to 320×200 resolution, your picture will double in width—taking up two 320×200 -size pages—and will gain available colors (but the colors in the picture itself won't change).

With the IIGS, you can create pictures in either medium or high resolution; however, you can't load pictures created in medium resolution while working in high resolution, and vice versa. Likewise, the number of colors is fixed in both resolutions.

What are the advantages and disadvantages of one format over another? It's really a matter of your style, the requirements of the picture, and the flexibility you need from the program. For example, choosing the lowest resolution frees up lots of memory. You'll then be able to use more *Deluxe Paint II* functions at one time, especially if you're using a computer with only 512K of memory. The trade-off for this, of course, is a more jagged-looking image. This is more than adequate, however, for diagrams or drawings that don't require fine detail.

Working in the higher resolutions limits the number of colors and uses up more memory. You'll find that some *Deluxe Paint II* features will be unavailable to you in the higher resolutions owing to insufficient memory. (That is, unless you have installed additional memory; *Deluxe Paint II* works best with one megabyte of memory.) With the Amiga, you can also save about 40K of memory by choosing Swap from the Screen Format box when loading *Deluxe Paint II* for the first time. This lets some portions of the program stay on disk rather than in memory until they're called for. The program then swaps a function in memory for the requested function.

It's good practice to pick the best resolution for the job before you begin work. Switching later to a different resolution entails penalties such as losing your current brush (and, if you trade down in colors, your original palette). If you're using an Amiga, there are some situations where changing resolutions in midstream is an advantage. One is when you want to reduce the amount of memory you're using to take advantage of some *Deluxe Paint II* feature that otherwise would be unavailable. You can simply drop down to a lower resolution to give yourself more workspace in memory. Another is to avoid working in the Amiga's interlaced modes. You can set up the framework of your picture in 640×400 resolution and then convert it to 320×200 for detailed work. The page will be four times the size of a standard 320×200 page—remember, there are four times as many pixels. You'll be able to see only one-quarter of the entire page at a time, but you won't have to stare at

a flickering screen. You can always switch back to 640 × 400 to get the big picture.

If you don't have a need for the higher resolutions, just click on OK in the Screen Format box. The default resolution is 320 × 200, with 32 colors (Amiga) or 16 colors (Apple IIGS).

Sizing the Screen

As you've gathered from the previous discussion, the size of your page is not limited by the size of your screen. *Deluxe Paint II* lets you set a number of sizes. These are listed in the Set Page Size Box (Figures 2-5 and 2-6).

Figure 2-5. Amiga Page Size Box

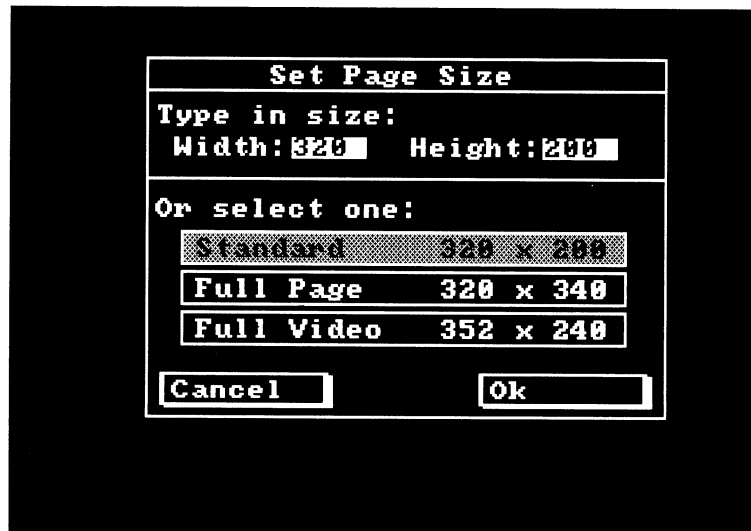
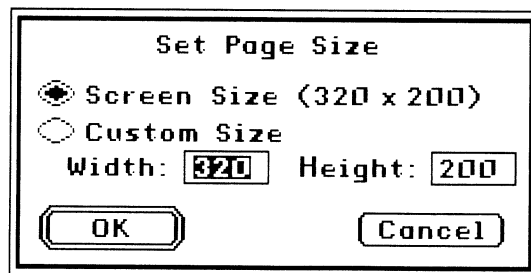


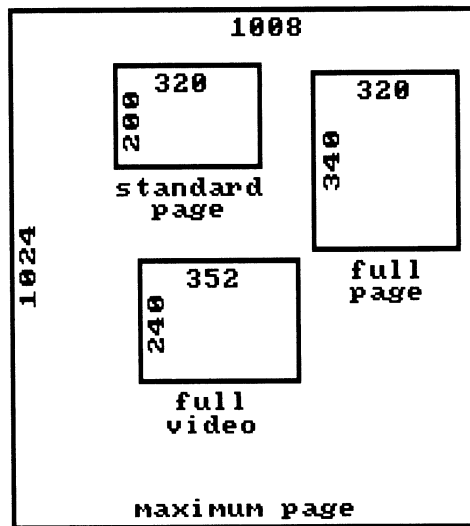
Figure 2-6. Apple IIGS Page Size Box



Deluxe Paint II is optimized for work with a standard-sized (320 × 200) page. You'll have all the memory you need for other *Deluxe Paint II* features. The IGS version also allows you to specify a custom page size up to twice the size of a standard page—in other words, 640 × 200 or 340 × 400.

With the Amiga, you have more flexibility. The Amiga version offers three sizes—standard, full page, and full video—as well as a provision for setting any size over 320 × 200 pixels that your memory will hold. The maximum page size in *Deluxe Paint II* is 1008 × 1024. These areas are shown in proportion in Figure 2-7.

Figure 2-7. Page Sizes



Full Page is sized to yield an 8½ × 11-inch picture on many printers (the standard page prints out to about half of that). Full Video extends the picture into the overscan area, which is the narrow border around the edge of a standard-size page. Use a full video page when you are creating graphics to show on television—it produces a more videolike effect that appeals to people who are conditioned to full-screen television images.

The larger the page, the more memory required. A 512K Amiga won't support a full-color 320 × 200-resolution page that's more than about four times standard size; you'll start running out of memory for painting tools even at smaller sizes. If you want to use an extra-large page, you need to get more memory or reduce the number of colors you're using.

You can move around at will in an oversize page by using the cursor keys on your keyboard. If you want to see the entire oversize page at once, select Show Page from the Picture menu (or press Shift-S on the Amiga, or Command-S on the Apple IIGS). There's more on working with oversize pages in Chapter 7.

Aspect Ratios: Landscapes and Portraits

Take another look at Figure 2-7. You'll see that the various pages differ not only in size, but also in proportion. Each has a different *aspect ratio*, the ratio of width to height.

A standard page is wider than it is tall, with a ratio of about four to three, the ratio of the standard television screen. A full page is slightly taller than it is wide. In the Western aesthetic tradition, a wide picture is considered to be appropriate for landscapes, a tall picture for portraits and figures, with the larger dimension often about 1½ times the size of the smaller one. (Other art traditions use different conventions for proportions. Chinese landscapes, for example, are often very tall and narrow.) Though people accustomed to modernist and postmodernist art may think that the landscape-portrait distinction no longer holds, psychologically we still look for landscape depth in a horizontal picture, and see a figurative orientation in a vertical one. Since *Deluxe Paint II* gives you wide latitude to choose your page and aspect ratio, give some thought to the dimensional requirements of your picture, keeping in mind the ramifications of the aspect ratio you choose. By confounding your viewer's expectations, you can add drama to your composition, or you can adapt a traditional format to give your picture a classic appearance.

Managing Disks and Files

Because computer memory is not permanent, but vanishes each time the computer is turned off, your computer provides a form of permanent storage in which to record your work. The Apple IIGS and Amiga both use 3½-inch microfloppy disks as their primary form of permanent storage. Both machines can use other disk sizes (with the proper disk drive, of course), but the rugged and capacious 3½-inch disk is preferred. Electronic Arts sells *Deluxe Paint II* only on 3½-inch disks.

As *Deluxe Paint II* takes up nearly all of its own disk, you'll be saving your work on a separate data disk. Formatted (ready-to-use) Amiga disks hold 880K bytes worth of pictures, while the Apple

IIGS's disks hold 800K bytes. That's 20 or more 320×200 full-color pictures per disk.

Take care of your disks with the same tender concern that you would lavish on a favorite drawing or print. Microfloppy disks are rugged, but not indestructible. Store them in a cool, dry place, in a hard box or padded case. Don't leave them in a hot car, on the kitchen table next to the peanut butter and jelly, or perched on the rim of the bathroom sink. Resist the temptation to open the sliding plate on the disk to see the disk inside; you might get something on the disk that will cause it to crash (a kind of self-destruction that makes files unreadable by the computer) the next time you use it.

Do flip up the write-protect tab on your disks when you're finished with them. *Do* conscientiously make copies of your disks at regular intervals—when you lose your first artistic masterpiece, you'll be glad you backed up your work. *Do* carefully label your disks. And make sure to have plenty of fresh, formatted disks around. Graphics use up lots of disk space, and you'll fill up your disks fast. Don't get into the situation of having a wonderful picture to save and no disk to save it on—and no way to format a disk because your computer is already tied up. (Your computer's manual explains how to format blank disks.)

Picture Files

Pictures, like any other form of work done on your computer, are stored on disk in files. The *Deluxe Paint II* disk has several picture files on it. Let's load one now. Pull down the Amiga's Picture menu or the Apple IIGS's File menu and choose the Load option. The Load Picture box will appear on the screen. Figure 2-8 shows the Amiga Load Picture box, while Figure 2-9 shows the Apple IIGS box. The Load Picture box gives you access to any pictures stored on disks in any disk drive connected to your computer.

Click on any picture title in the list of pictures; the title will then appear on the file line. Then click on Load to load it, and after a short delay the picture will appear. Try this with all the pictures on the *Deluxe Paint II* disk (and the *Deluxe Paint II* Art Disk if you received one).

In the same menu, you'll find similar options for saving (and if you're using the Amiga version, there is a Delete Picture box as well). The boxes that give you access to these functions are similar to the Load Picture box. With this system of boxes, *Deluxe Paint II* gives you an easy and nearly foolproof way of managing your picture files.

Figure 2-8. Amiga Load Picture Box

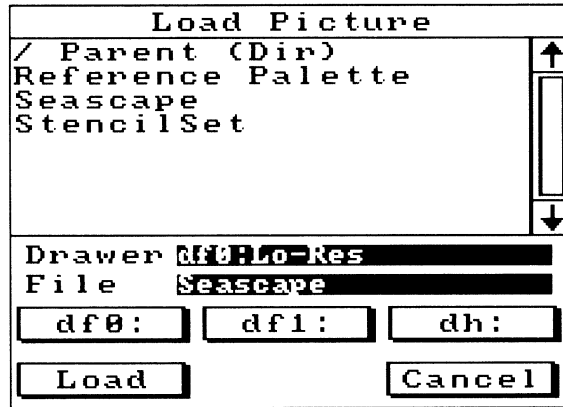
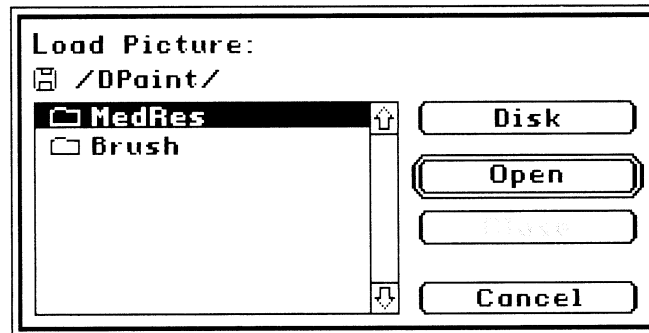


Figure 2-9. Apple II Load Picture Box



Now would be a good time to format your own data disk and use the pictures on the *Deluxe Paint II* disk to practice loading, saving, and deleting picture files. Remember that when you delete a picture, you can't get it back again. For that reason, it's best not to delete anything stored on your *Deluxe Paint II* disk. Transfer the picture to your data disk and practice deleting it from there. Note that to save a new picture, you must first type in a filename in the Save Picture box. If you want to save more than one version of the same picture, give each version a different name.

It's worthwhile to acquire a few good habits for managing picture files. The first and most important, as mentioned earlier, is to save your picture at frequent intervals during a work session. Get into the habit of saving your work when you pause to think about the next phase of the picture or when you leave the computer for a

moment. Each successive save supersedes the one before. Should the picture in memory be lost for any reason—a power outage, for example—at least you’ll have a recent stage of the picture on disk; you won’t have lost the whole thing. Likewise, if you go off in a false direction and don’t like what you’ve drawn, you can back-track by calling up the last version you saved and work forward from that again.

You may also find it useful to save more than one stage of a picture in separate files. This gives you the option of branching off into different directions from the same basic image—often the case when you are working on a series of related pictures. Give the stages names like *Horse I*, *Horse II*, and so on, and add the date if you have room. A methodical approach to naming and dating similar-looking pictures will save you time and frustration later.

IFF

Deluxe Paint II files adhere to a standard format, the Interleaved File Format (IFF), developed by Electronic Arts. Other Electronic Arts programs in the Deluxe Creativity Series, such as *Deluxe Video Construction Set* and *Deluxe Print*, can use *Deluxe Paint II* IFF files. Many other Amiga programs also create and can use IFF picture files, which means you can use your *Deluxe Paint II* pictures with a wide variety of other software, and use images created with other software in *Deluxe Paint II*. At present, IFF is not yet the standard picture file format for the Apple IIGS, although other Electronic Arts IIGS programs planned for release will use it.

Input and Display—Mouse, Keyboard, and Monitor

The *Deluxe Paint II* environment also encompasses the hardware you use to communicate with it. You control the program with *input devices*, the mouse and keyboard, and *Deluxe Paint II* communicates back via your computer’s monitor.

Mouse. You’ve already played with the mouse a bit, and know that it’s the principal tool for communicating with *Deluxe Paint II*. But you may be having some trouble adapting to it as a drawing tool. Using the mouse is not like using a pencil, marker, or brush. It requires a new kind of hand-eye coordination, one that an experienced artist, curiously, may find harder to learn than the novice. One problem is that you can’t see the actual point where the mouse contacts the table—the very point on which, with traditional tools, you focus all your concentration. Instead, you have to look in

an entirely different direction, watching the position of the pointer or brush and ignoring what your hand is doing.

Getting good at mouse work simply takes practice. No matter how frustrating it seems now, soon you'll be placing one-pixel brushes anywhere on the page with speed and precision. You'll find that the mouse is actually quite a good tool for drawing.

Using the mouse can be made easier by providing it with the right habitat. Give your mouse enough room to roam free—about a square foot of clear table surface. Keep your mouse clean—it can be snapped apart and swabbed out with alcohol. A polyester-rubber or leather mouse mat to roll the mouse on will increase the positive traction of the mouse ball and improve the accuracy of your movements.

The Amiga and Apple IIGS mice are essentially similar in operation. The main difference is that the Apple IIGS mouse has one button, while the Amiga mouse has two. For clarity, this book uses the following mouse terminology:

Click—briefly pressing on the drawing button, meaning the Apple IIGS's single button or the Amiga's left button.

Double-click—clicking twice in quick succession.

Right-click—clicking with the Amiga right button or with the Apple IIGS button while pressing the Command key.

Drag—holding down the drawing button while moving the mouse.

Right-drag—dragging with the Amiga right button or with the Apple IIGS button while pressing the Command key.

Select—choosing a tool or feature by positioning the pointer over it and clicking.

Right-select—selecting with the Amiga right button or with the Apple IIGS button while pressing the Command key.

Keyboard. The keyboard has its own place as a *Deluxe Paint II* input device. You can't draw with it, but you can make drawing easier. Many *Deluxe Paint II* commands and features can be called up or modified by hitting a key. This helps minimize unnecessary mouse movements. When doing a complex bit of work in a far corner of the screen, it can be a real nuisance to have to jump over to the menu bar or the toolbox for a new tool. It's far easier to use your other hand to select features with the keyboard, and the mouse won't have to move at all. The experienced *Deluxe Paint II* artist can have both hands working at once, with a dramatic

increase in work speed. Of course, you have to learn which keys control which features. The keyboard commands for each computer are pictured in Appendix B.

You also need the keyboard to add text—titles, labels, and the like—to your pictures. Chapter 8 covers the operation and use of the text tool.

Monitor. The display monitor, as mentioned before, is your canvas. If you have an Amiga, you're most likely using the 1080 color monitor that came bundled with your machine. And if you own an Apple IIGS, you probably bought it with the AppleColor RGB monitor. These monitors are analog RGB monitors, which, for the purposes of our discussion, simply means that they are optimal for displaying the full range of colors and resolutions available on both computers. It's possible to connect other kinds of displays—composite monitors and even ordinary color televisions—to either computer, but these will not produce the same crisp and colorful images as an RGB monitor, and they're not recommended for use with *Deluxe Paint II*. Both computers can accept other makes of RGB monitor, some of which are far superior to the standard monitors offered by Commodore and Apple. Buy a better monitor if you can afford to do so. The best displays, like the best quality canvas cloth, provide the best ground for your work. When shopping for a monitor, look for a low dot pitch (under .35 mm); a high bandwidth (over 15 megahertz); a flat, square screen; and a full range of controls.

Whatever monitor you have should be kept clean. Video screens attract dust. Clean yours regularly with glass cleaner. Do this first thing in the morning, before you turn on the power. Apply the cleaner to a cloth or paper towel—never spray liquids directly on the screen. Don't touch the screen either, since your fingerprints will be visible. To prevent eyestrain, position the monitor so that it doesn't reflect glare from window or artificial light.

Transferring Your Art Skills to *Deluxe Paint II*

Painting and drawing in the *Deluxe Paint II* environment differ from the traditional practices in important ways. It's worth considering these differences, and how you'll adapt to them, before you go on to the exercises in the following chapters.

If you're already an artist, you'll want to reevaluate your skills and experience. What you'll miss first when starting to work with your computer are the customary textures, smells, and sounds of

making art—the physical feedback that many artists relish as part of what attracted them to art in the first place. There’s no paint on your fingers or broad gestures of your painting arm; no smell of turpentine, printer’s ink, or pencil shavings; no hiss of paper and felt running through an etching press. Instead you sit nearly motionless, watching a video screen, hearing its 60-cycle hum, and smelling warm electronics. Art making with *Deluxe Paint II* is more a mental activity and less a physical craft, and the art that results has less of a robust, “art object” presence.

Some of your artistic skills will apply in this environment, others won’t. A designer who spent long hours learning how to lay down a blotchless line against a T-square with an ink pen will find that skill useless when switching to computer rendering. *Deluxe Paint II* effortlessly lays down straight lines in any thickness and color. But the designer’s talent for clean design and clarity of layout will still be useful. Likewise, the watercolorist who knows 20 ways to vary a wash can carry over to *Deluxe Paint II* an eye for subtle, carefully blended gradations of color. The airbrush artist can still use knowledge of how to render gleaming, rounded surfaces. The more conceptual your skill, the more it will apply to work with *Deluxe Paint II*. The more rooted your skill in a particular art medium or craft, the less likely it will translate well to the computer realm.

For this reason, the style of your work will probably change. The relatively coarse resolution of computer graphics may push you toward a broader technique or a style more dependent on geometric shapes and less on sinuous lines or fine detail. You may, like many artists, be inspired by the very visual qualities that set computer graphics apart and exaggerate them in your work. Or you may choose to maintain stylistic continuity with the art you were creating before. *Deluxe Paint II* makes this possible by providing a wide range of tools you can use to give your work the appearance of a pen-and-ink drawing, a gouache, a pastel, a paper collage, or even a photograph. Several of these techniques are discussed in Chapter 6. Above all, keep an open mind, and be sensitive to the computer’s own characteristics.



CHAPTER 3
Basic Drawing

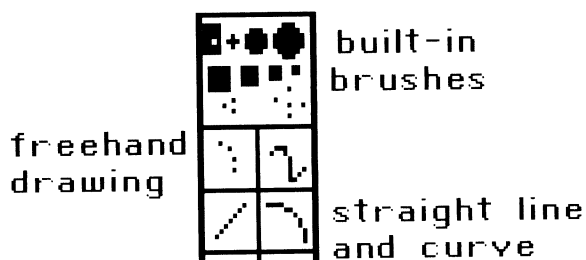


In this chapter, you'll take an in-depth look at basic drawing with *Deluxe Paint II*. Load the program, select the 320 × 200 resolution and maximum colors, grab the mouse, and let's begin.

Line Drawing

At the top of the toolbox are icons for the built-in brushes and four kinds of line-drawing tools. The Amiga icons are shown in Figure 3-1. The Apple IIGS icons may differ slightly in appearance from those in Figure 3-1, but they don't differ at all in function.

Figure 3-1. Built-in Brushes and Line Tools



Brushes. The built-in brushes come in ten basic sizes and shapes—a one-pixel brush, a small cross, two circles, four squares, and two stippling brushes. You can select one of these at any time and paint with that brush in any color.

And you're not limited to the brush sizes the toolbox provides. To change the size of a built-in brush, right-select it and then move to the page area. You'll see a brush-sizing gadget like the ones in Figure 3-2 (the Amiga version) and Figure 3-3 (the IIGS version). Drag the gadget in any direction until the brush is the size you want.

Drawing tools. All brushes must work in tandem with a *drawing tool*. Below the built-in brushes are the freehand drawing tools—a dotted line on the left and a solid line on the right.

Figure 3-2. Amiga Brush-Sizing Gadget

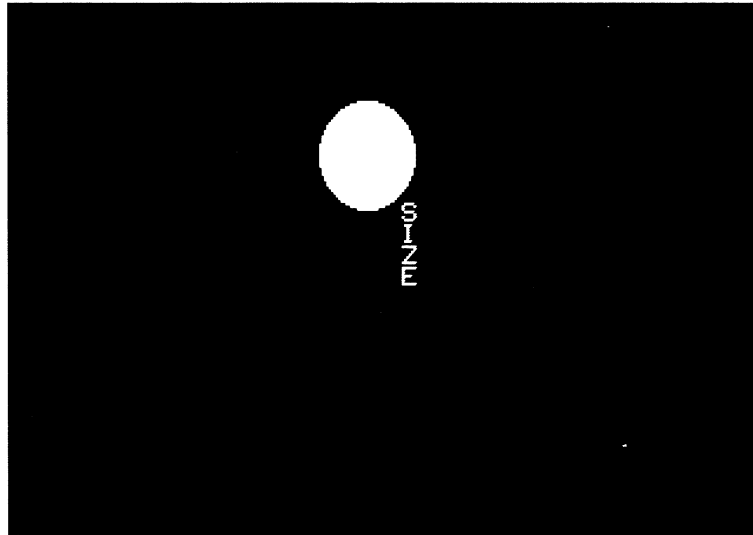
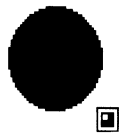


Figure 3-3. Apple IIGS Brush-Sizing Gadget



Use the dotted-line tool to make quick sketches and rough outlines, when you're drawing from life, for instance (yes, you can do that with a computer). Use the solid-line tool for detailed work.

Draw some practice lines with the freehand tools and the various built-in brushes. Figure 3-4 gives you an idea of how each combination looks on the page.

Notice that all the brushes can keep up with the crosshairs when you use the dotted-line tool, but that the space between brush marks gets wider the faster you draw. The smaller brushes can keep up with the solid-line tool, for the most part, but larger brushes lag behind. If you move the crosshairs too fast, the brush will take a shortcut to the end of the line rather than follow the path you defined. With the solid-line tool, the bigger the brush, the slower you should draw.

After you've experimented with the freehand tools, select CLR to clear the page and restore a pristine canvas.

UNDO. Suppose you want the picture back; you've decided to save it for nostalgia's sake, to look at fondly when you've become an acknowledged *Deluxe Paint II* master. *Deluxe Paint II* gives you the power to do that, to recover from your mistakes. To rescue

Figure 3-4. Freehand Drawing



your picture from oblivion, select UNDO (next to CLR in the toolbox), and your work is restored.

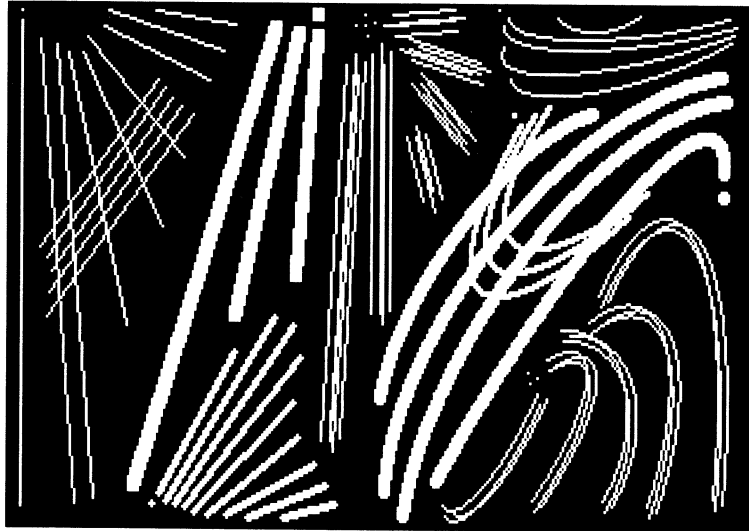
UNDO is an invaluable feature, but it has its limits. It will undo your last painting action—mouse click or keypress—but *only* the last action. If you inadvertently click a button or hit a key before you select UNDO, you won't undo the mistake, only the intervening action. Keep a cool head when you make an error, and use UNDO immediately. You can even restore your mistake if you like by selecting UNDO again—UNDO even undoes itself.

Now turn to the toolbox again. Below the freehand line tools are tools for drawing straight lines and curves. A selection of representative lines and curves is shown in Figure 3-5.

Straight lines. To draw a straight line on the page, select the straight-line tool, pick a starting point, and drag the crosshairs to an end point. As you drag, *Deluxe Paint II* draws a straight line from the starting point to the crosshairs, even if you don't move in a straight line. Release the mouse button at the end point, and the line is set.

Note that the smoothness of the line depends on its angle. Vertical, horizontal, and 45-degree-angle lines look the smoothest, while lines drawn at odd angles look stairstepped and jagged. You'll soon become intimately familiar with the pattern of treads and risers that characterize any line angle, and learn to adjust your drawings to take advantage of the smoothest lines.

Figure 3-5. Lines and Curves



Curves. The curve-drawing tool provides you with the equivalent of an infinitely flexible set of French curves. It works in much the same way as the straight-line tool, but requires one additional step. Once you've moved the crosshairs from the start to the end of the curve, the line stays "alive." It stretches like a rubber band to include any third point you choose. Simply click on that point to set the *apex* of the curve. Try drawing several different curves now. You'll see that the curve tool only creates parabolic curves, not circular or elliptical arcs.

Spacing. Now right-select the straight-line tool. The Spacing box will appear. Figure 3-6 shows the Amiga Spacing box; Figure 3-7, the Apple IIGS version. This gives you the ability to create lines and shapes with any number of evenly spaced dots.

The value in the number box, which you specify, determines how far apart the dots will be. You can choose between relative spacing, which uses the specified number of dots no matter how long the line is, and absolute spacing, which places the dots the specified number of pixels apart. For example, if you use a relative spacing of 8, there'll be eight dots on your line. An absolute spacing of 8 will set the centers of your dots eight pixels apart; there'll likely be many more than eight dots on the line, but you'll know just how far apart the dots are. The difference is demonstrated in Figure 3-8. The On option in the IIGS Spacing box lets you toggle spacing on and off in your line so you can compare effects.

Figure 3-6. Amiga Spacing Box

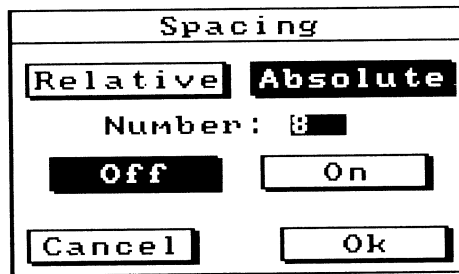


Figure 3-7. Apple IIgs Spacing Box

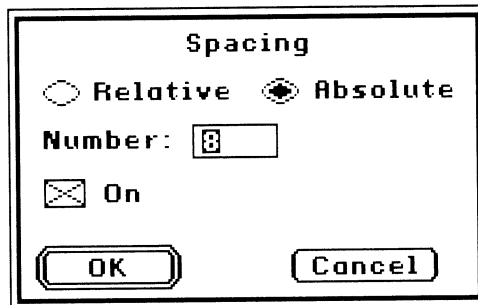
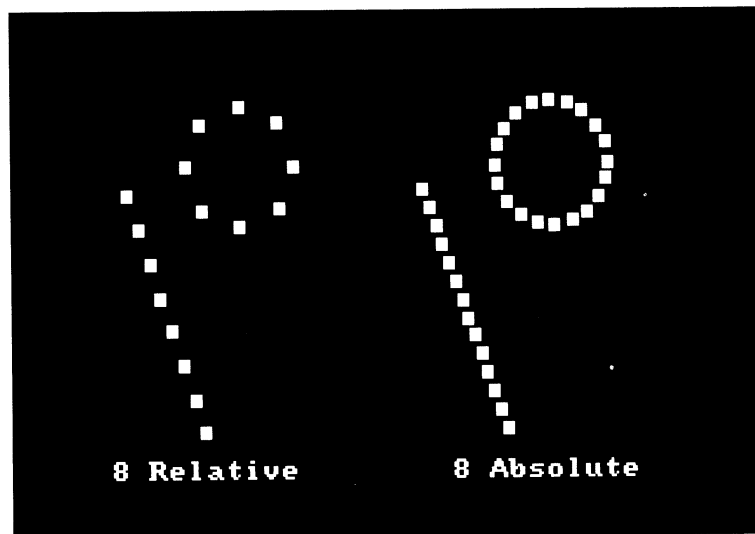


Figure 3-8. Spacing



The Spacing feature works with the straight- and curved-line tools, as well with the outlined-shape tools discussed below. You'll turn to this feature often if you plan to do architectural, mechanical, or cartographic design work with *Deluxe Paint II*, or if you need to draw diagrams for assembling components, folding and cutting patterns, or planning football plays.

Figure 3-9. Hand



Take the time now to try a straightforward line drawing. Your nondrawing hand would be a convenient subject. Figure 3-9 (that's not the author's hand) gives you an idea of the line quality and expressiveness available to you in *Deluxe Paint II*.

Note: If you're using an Amiga, you'll still be drawing with a white brush on a black screen—the default colors. If you want to draw in color on a white background, first read the section in this chapter on choosing and altering colors with the toolbox palette.

The Shape Tools

Below the line tools are tools for drawing geometrical shapes (see Figure 3-10). With the shape tools you can make perfect rectangles, circles, ellipses, and polygons (closed, many-sided shapes), either outlined or filled. Figure 3-11 gives a few examples of possible shapes.

Figure 3-10. Shape Tools

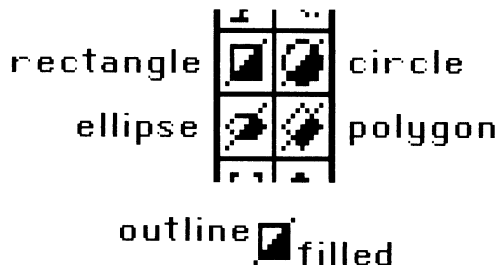
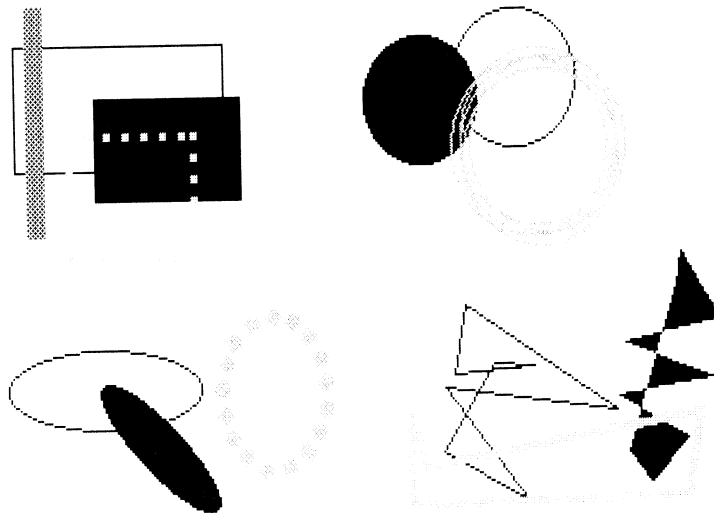


Figure 3-11. Making Shapes



Rectangles. To draw a hollow rectangle, select the upper left half of the rectangle icon; then choose a brush. When you move out to the page, the crosshairs become the center of a large *reticle* (a special set of crosshairs) that helps you position the rectangle and determine its dimensions. Pick a location for a starting corner (as a reader of English, you'll probably usually choose the upper left) and then drag diagonally until you have the rectangle you want. Release the mouse button to fix the rectangle. Use the same process to make a filled rectangle, but select the lower right half of the icon instead. To make a square, press the SHIFT key (which acts as a constraining key) as you drag. The sides of squares may appear slightly unequal due to the slight rectangularity of pixels in the 320×200 resolution. You can compensate for this by choosing Be Square from the Amiga's Preferences menu or Square Aspect from the IIGS's Edit menu.

Circles. Circles are drawn by putting the crosshairs where you want the circle's center to be and then dragging outward until you get the right diameter. Be Square/Square Aspect also works to counteract the aspect-ratio distortion in circles, making them more circular.

Ellipses. Ellipses are created much like circles. Set the ellipse's center, and drag diagonally to set the short and long axes. When you release the mouse button, the ellipse tool is still active—at this

point you can change the angle of the ellipse (rotate it by dragging in a circle and then releasing) or readjust the axes (click again to confirm the shape).

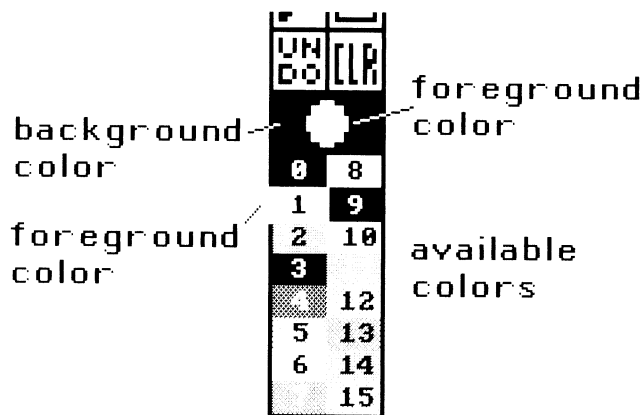
Polygons. Drawing a polygon is like drawing a succession of connected straight lines to form a closed shape. At the end of each leg of the polygon, click the mouse button and you stretch out a new side. The polygon is complete when you connect the end of the last side with the beginning of the first. As a shortcut, you can hit the space bar, which will complete the last side of the polygon for you.

Try drawing using the different shape tools with various brushes and spacings. Practice making a row of boxes that are the same size, a series of concentric circles, ellipses angled at increments of 45 degrees, an equilateral triangle, and a triad of five-pointed polygonal stars. These exercises will help you develop your eye for exact placement of the brush.

The Toolbox Palette

Now you're ready to begin work with color. The toolbox provides a palette (the Amiga version is shown in Figure 3-12) that gives you access to all the available colors.

Figure 3-12. Amiga Toolbox Palette



Foreground/Background. At the top of the palette is the color indicator box. The circle (if you have an Amiga) or the rectangle (if you have an Apple IIGS) in the center shows the *foreground* color—the color of your current brush. The color around it is the *background* color—the color of your canvas.

Think of the background color as being underneath the foreground colors, like the colored ground that oil painters often paint on fresh canvas before starting the painting proper. Understanding the distinction between foreground and background color is crucial, because there are a number of techniques that depend on switching background and foreground colors, painting with background over foreground, and so on.

The palette. Below the color indicator is the palette itself. In Figure 3-12, 16 available colors are shown, numbered 0–15. Select any foreground color in the palette. Your built-in brushes and filled shapes will now paint in that color. Notice that the selected foreground color is highlighted by a border. Choose any background color by right-selecting it. Right-drag your brushes and tools to paint in that color. Painting with the background color in essence erases whatever’s underneath. (See below for more on erasing techniques.)

Clear the page and try drawing with different foreground colors. If you want to change to another background color, pick the new color and then clear the page. *Deluxe Paint II* always clears to the current background color. From now on, use white as the background color—remember to clear the page to white before beginning any of the projects in this book.

Take a look at the selection of colors in the toolbox palette. The range of colors you see are the ones *Deluxe Paint II* presents whenever you open the program. For many kinds of graphics, this *default* palette is all you’ll need; it has black and white, the primary colors, a selection of pastels, and a range of gray tones. Sooner or later, however, you’ll need to define your own palettes. Chapter 5 describes *Deluxe Paint II*’s powerful palette-creation features. If you like, you can skip ahead to read that chapter now.

The Fill Tool

You’ve seen how easy it is to create filled geometric shapes with the shape tools. But how can you fill irregular areas drawn with the other tools? It’s simple—use *Deluxe Paint II*’s fill tool to fill any shape or area with any color.

To fill the area, select the fill tool from the toolbox (it’s right above the rectangle-shape tool). As you move out to the page, the pointer turns into an icon that looks like a can spilling paint. At the very bottom of the “spill” is a one-pixel gap. Place that gap in any bounded area and click to fill with the foreground color. Right-click to fill with the background color.

Draw some closed shapes, and try filling them with color. Note that the fill tool will fill a bounded area of any color even if that color was laid down in patches at different times. Also note that if there is a gap in the boundary of the area to be filled, the color will spill through the breach and invade the adjacent areas. If this happens, undo the fill and close the gap with a small brush in the outline color.

Another common problem occurs when you're working in a small area and accidentally fill the wrong area. Undo this too—don't try to fill the area again with the original color. You may have lost the area's original boundary.

Deluxe Paint II provides other area-filling and shape-filling options as well. Right-click on the fill tool to bring up the Fill Type box. The Amiga Fill Type Box is shown in Figure 3-13, and the Apple IIGS Fill Type box in Figure 3-14. You can select not only the usual solid color fill, but also pattern fill from a custom brush, pattern fill in perspective, and a range of gradient fills (fills that blend a selection of colors to produce a smooth, graded effect). Several of these options are illustrated in Figure 3-15.

Figure 3-13. Amiga Fill Type Box

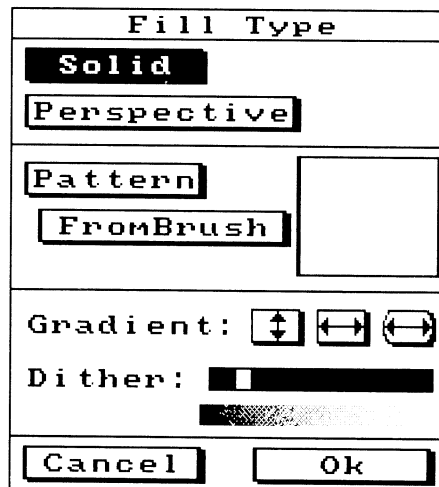


Figure 3-14. Apple IIGs Fill Type Box

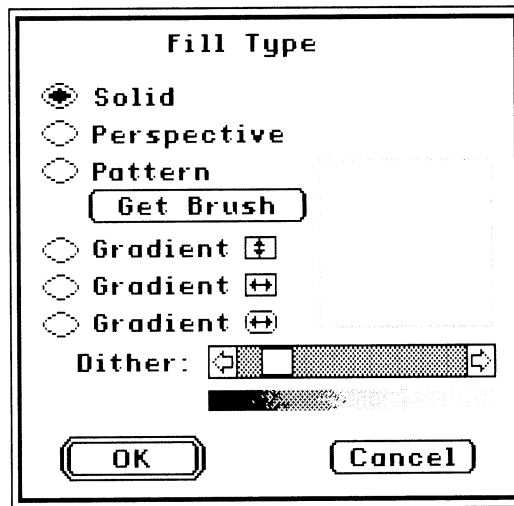
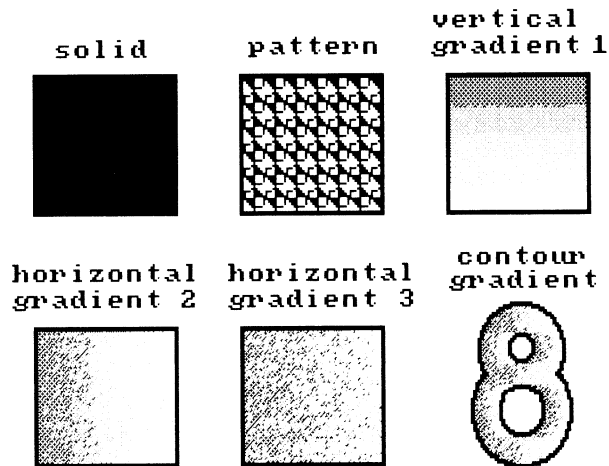


Figure 3-15. Filling Shapes



You'll learn more about the fill types in later chapters. Chapter 9 covers filling with custom-brush patterns, perspective fills are discussed in Chapter 10, and there's more on gradient use in Chapter 6.

Erasing

To err is human, but to erase can be devilish, at least with traditional media. *Deluxe Paint II* banishes that demon. You already know about CLR and UNDO, but there will be plenty of times when you won't want to erase your whole picture, or it's already too late to undo what you want to erase.

Deluxe Paint II does not have an eraser tool per se, but it does provide several ways to quickly erase large and small areas, as you can see in Figure 3-16.

Erasing techniques all involve painting over the area to be erased with the current background color. (Remember that you can paint with the background color by right-dragging a brush or shape tool.) The simplest way to erase is to right-drag over the area with your current brush—the option shown at the upper left of Figure 3-16.

Figure 3-16. Erasing



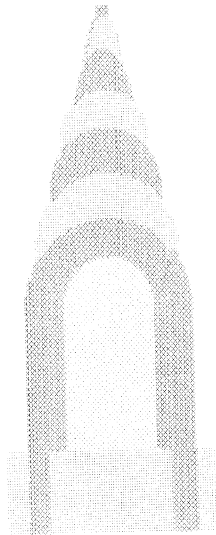
This can get laborious when the area is large and the brush is small. A second option is to paint a solid shape over the area. At the upper right of Figure 3-16, a square is obliterating the circle.

You can also create a shape that's the same size as the one being erased, superimpose it over the area and right-click. That is what is about to happen to the bottom circle—it's being eclipsed by a custom-sized built-in brush. Erase a straight line with a straight-line eraser, a hollow ellipse with a hollow-ellipse eraser, and so on. You can also erase solid areas by filling them with the background color. There are other ways to tailor shapes for precise erasure of complicated areas, but they all involve the same principle of overpainting with the background color.

Composing a Picture with the Basic Tools

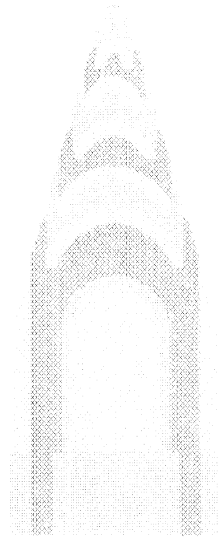
You've got the basic tools down pat. Now you're ready for a challenge. Let's use what you know so far to create a picture of that Art Deco masterpiece, the top of the Chrysler Building (Figures 3-17 through 3-20). You'll be working with the built-in brushes; the freehand-, straight-, and curved-line tools; the filled-rectangle, -circle, and -polygon tools; the solid-fill tool; and the toolbox palette. Use any colors you like for this exercise as long as you include a range of lights and darks.

Figure 3-17. Chrysler 1



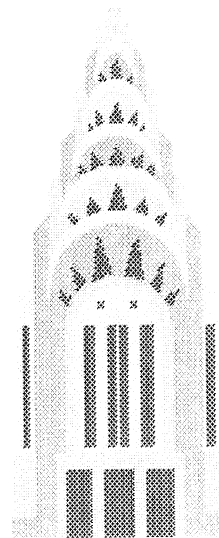
- » First, draw a box to define where the drawing will be. For this drawing, you will use the full height of the page, but only about a third of the width. Run a straight line down the center of the box to help align the centers of the shapes you'll draw inside. Now block out the spire with the curve tool and the solid-circle and solid-rectangle tools. The two top levels of the "ziggurat" are made with the curve tool and then filled with the fill tool; the levels below that are made with overlapping solid circles in alternating colors. Start from the top and work down, superimposing each successively larger shape over the one above. Then extend the lowest circles with the solid-rectangle tool. Redraw the center line as necessary; you can use other temporary scaffolding lines as you need them, and then erase them when they are no longer necessary.

Figure 3-18. Chrysler 2



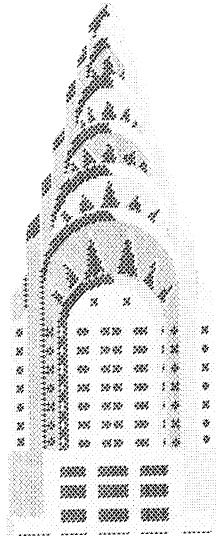
- » You can now erase the box and center line if you want, or leave them there for future reference. Use the curve tool with a fat built-in brush to paint in the sloping steps of the ziggurat. Study the way the sides of the sloping area are treated; the sloping steps are seen on edge at each side. Draw them carefully with the filled-polygon tool.

Figure 3-19. Chrysler 3



- » Smooth out the sloping steps with the curve tool and a one-pixel brush; then clean up the curves with the freehand line tool. Now add the small triangles with the filled-polygon tool. These may be hard to get just right—it helps to start from the center and work out to each end. Redraw the center line if you need it. Also block in the windowed areas with the straight-line tool and the fat, square built-in brushes. The wide window blocks are made with the solid-rectangle tool. To get the windows correctly spaced and centered, you'll have to count pixels—difficult, but a useful trick to practice.

Figure 3-20. Chrysler 4



- » Now add the finishing touches. Selectively fill parts of the left-hand side of the spire with darker colors to show that the light is coming from the right. Add a light-colored edge to the right side of the triangles with the straight-line tool to make them “pop out” from the side of the building. Define the steps of the ziggurat with narrow straight lines as well. Use carefully spaced straight lines to finish the windows. Adjust the proportions of the bottom with the solid-rectangle tool, clean up any ragged areas with small brushes and erasers, and the drawing is complete.

Don't be discouraged if you found this drawing difficult in places. Tackling difficult tasks is the best and most satisfying way to learn.

Deluxe Paint II has many advanced features that make the creation of complex pictures easier. You'll look at one of the most powerful, the custom-brush tool, in the next chapter.

CHAPTER 4

Custom Brushes



With *Deluxe Paint II*'s custom-brush tool, the parts of your painting can have lives of their own. You can take any part of your work and draw with it, erase it, resize it, stretch it, rotate it, warp it, skew it, change its colors, make it transparent, outline it, and make a shadow for it. You can draw individual objects and save them in separate files, all to be assembled later like a collage. Or you can break apart a finished picture into its components, and then use those components in other pictures

Creating Custom Brushes

With the assistance of a Mr. Arnolfini (and apologies to Jan van Eyck), let's put the custom-brush tool through its paces.

First, load any picture onto the page. Find the custom-brush-tool icon in the toolbox, just underneath the ellipse tool. Select it and then move out onto the page. You'll see a reticle (large cross-hairs) like the one for the rectangle tool. Drag a box to enclose any area that you'd like to make into a custom brush and then release the button. You now have the original area and an exact copy (as in Figure 4-1). Move the copy anywhere on the page just like a built-in brush.

Right-drag the custom-brush box to pick the brush area right up, just as if you were peeling a decal or sticker from its backing. If the brush was painted onto an area of foreground color, a "hole" showing the background color will be left behind.

You can also capture areas that are not rectangular. Double-click on the custom-brush tool to activate the polygon custom brush. Now you can draw a polygon around any area and pick up that polygon as a brush (Figure 4-2). As with the polygon-shape tool, you can complete a polygon brush by pressing the space bar.

Figure 4-1. Creating a Custom Brush



Figure 4-2. Making a Polygon Brush



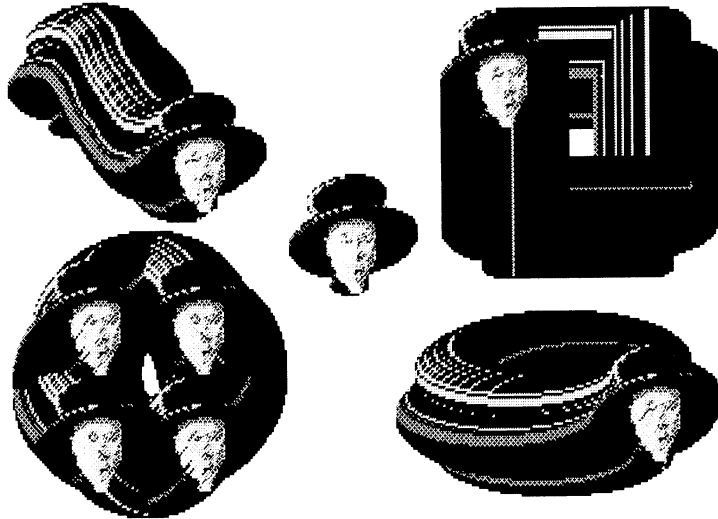
What can you do with a custom brush? Everything you can do with the built-in brushes, and much more.

Click to stamp a clone of the brush anywhere on the screen. Drag the brush to paint with it. Right-drag to paint in the background color. Use the brush in tandem with the spacing feature, the line tools, the shape tools, and the pattern-fill feature. Our friend Arnolfini demonstrates several of the options in Figure 4-3.

Try these with your own brush. Painting with a multi-colored brush is like painting with a rainbow. In fact, you can make a rainbow quite easily by creating a thin vertical brush with all the colors of the spectrum—red, orange, yellow, green, blue, and violet—and then turning on the curve tool to paint a great arc across the page.

You can see that any areas in your custom brush that were in the background color when you made the brush are now transparent. They'll stay transparent even if you change the background color later. If you look at Arnolfini's face in Figure 4-3, you'll notice

Figure 4-3. Drawing with the Brush



that brush smears are visible through the parts of the face that are white—the background color when the brush was created.

Objects with a complicated outline can be painted on blocks of background color, then picked up as a custom brush, and transferred to the picture proper. Only the object itself will be visible, not the surrounding area of background color.

Normally, custom brushes can be any size or proportion. The only size limits are imposed by your computer's available memory. With a 512K machine in 320×200 maximum-color mode, you'll have difficulty picking up a custom brush that approaches the standard page size. *Deluxe Paint II* will show you an outline of the brush rather than the brush itself if you are reaching your computer's memory limit. And if you try to grab too big a brush, *Deluxe Paint II* will simply refuse to do it. Solution: pick up half the brush at a time and work with each half separately. You can always reassemble the pieces at the end.

The Brush Menu

Custom brushes can be modified with the Brush menu. Pull it down now to view the various options. If you have an Amiga, you'll notice options for loading, saving, and deleting brushes in files. Brush management is accomplished through a system of

boxes similar to the ones for managing picture files. The Apple IIGS brush file options are in the File menu.

Brush files generally take up much less disk space than picture files so you can fit scores of them on a disk. For that reason, it's worthwhile to save parts of your work as brushes, even if you don't have any immediate need for them. You'll find lots of unanticipated uses for those brushes in other pictures.

Sizing Brushes

Try choosing each of the size options to see how they affect your brush. As shown in Figure 4-4, you can double and halve your brush size, and change its aspect ratio, making it wide and squat, or tall and thin. Notice that when you shrink a brush, it loses detail—gets smaller by dropping every other pixel—while enlarging a brush adds no detail, but simply doubles the brush's height and width.

Figure 4-4. Brush Sizing



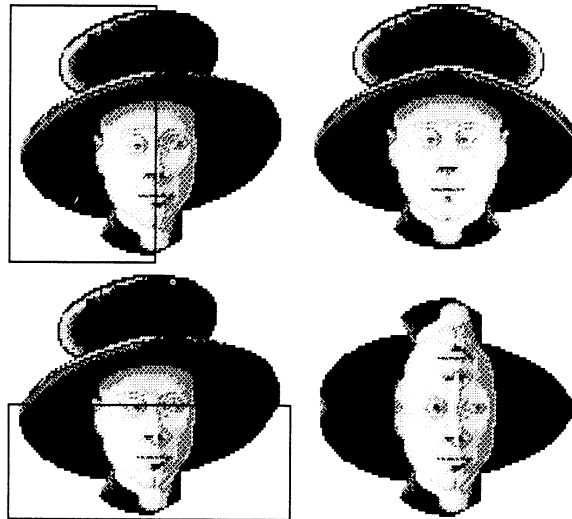
Use the stretch option to make your brush any size or aspect. Choose Stretch from the Brush menu and then drag the box until you've reached the size you need. Don't be surprised, though, if a radically stretched brush looks ragged and distorted. Try stretching a few brushes to see why. Text is particularly averse to being stretched—even slight irregularities in type grate on the eye.

Antialiasing can help (see Chapter 10). To maintain the brush's proportions while it's being stretched, press the SHIFT key.

Flipping Brushes

Choosing the appropriate flip option from the Brush menu lets you flip a brush horizontally and vertically. Using the flip options is an easy way to create bilateral symmetries and mirror images of the sort that have fascinated artists since antiquity. To draw a perfectly symmetrical object, first draw half of it; then pick that up as a brush, flip it, and join it to its mirror twin. This can have curious results when you're working with faces (Figure 4-5).

Figure 4-5. Flip a Brush



Another way to use the flip feature is to take an existing drawing and flip it to check for proportion problems. You'll often notice something out of proportion in a flipped drawing that wasn't readily apparent in the original orientation. It's especially worthwhile to check drawings of faces and figures in this way. Sometimes the brush will just look better flipped one way or the other. You can fall into the rut of always having the focus of your painting be to the right or left, but flip gives you an easy way out of that.

Rotating Brushes

Rotating brushes is nearly as easy as flipping them. Rotate your brush in 90-degree increments by choosing the appropriate option from the Brush menu. Rotate the brush to any angle by choosing that option and then, when the rotate box appears, by dragging it in a circle by its lower right corner. Keep an eye on the stair-stepping of the box's sides to get an idea of what angle you're at. Rotating your brush at an odd angle may leave it looking ragged around the edges, as in the Arnolfini at the upper left in Figure 4-6. Antialiasing helps here too (again, see Chapter 10).

Figure 4-6. Distortions



Skewing and Bending

Figure 4-6 also shows *Deluxe Paint II*'s fun-house custom-brush options. The long-suffering Arnolfini is being skewed and bent horizontally and vertically. The skew and bend features are amusing, but they do have serious uses, as when a custom brush must appear to be lying on an oblique plane or to be wrapped on a cylindrical surface—for example, lettering on the label of a champagne bottle. (In fact, you'll probably find yourself using these options with text more than with other kinds of images.)

By applying a combination of vertical and horizontal bending, you can give a brush the appearance of being reflected in a silver ball (Figure 4-7), an ever-popular subject for computer artists. Here's some tips on how to do this:

Figure 4-7. Ball Reflection



- » First, pick up your brush and bend it horizontally. You must then stamp down the bent brush and pick it up again before you can bend it vertically.
- » When you have what looks like a suitably spherical distortion, stamp the brush down again. Draw a circle around it for the sphere's outline, then erase any part of the brush outside the outline.
- » Finally, add shading and highlights. Copy the shading in Figure 4-7, or better yet, study a marble under different kinds of lighting to get an idea of how to shade a shiny sphere. If you like, collect balls of various surface textures, colors, and degrees of reflectivity—an orange, a golf ball, a rubber ball, a ping-pong ball, a billiard ball, a ball bearing, and a clear marble—and try to render each kind of surface alone and with a brush warped onto it.

Brush Handle

One other menu option affecting the use of the brush is Handle, found in the Amiga's Brush menu and the Apple IIGS's Edit menu. This lets you choose where you "hold" the brush—in the center (the default setting) or at any corner. Try picking up and moving brushes using each option to see the difference.

Using a corner handle has some definite advantages. For one thing, when you first make your custom brush, it doesn't suddenly pop out of place to center itself under the pointer, as it does with a center handle. It stays put, making slight repositioning of the brush easier. Also, you can move the brush completely off the page on the sides opposite the handle. You've probably already discovered that you can't do that with a center handle. You'll be using a corner brush handle a lot when you work with *Deluxe Paint II's* perspective feature, so be aware of how the brush handle affects brush manipulation.

Brush Color

There are several ways to quickly change the colors of your brush without making changes in the palette itself. One simple way to convert any areas in your brush that are in the background color—that are transparent—into any other color is by stamping the brush over a field of that color. This is shown by the upper left image in Figure 4-8.

Figure 4-8. Brush Color



Now take a look at the Mode menu next to Brush. You've probably noticed that this is set to Matte whenever you use a custom brush. That's *Deluxe Paint II's* default custom-brush mode.

Color/Replace. Pick up a custom brush and try selecting Color. The brush now paints only in the current foreground color, as in the upper right image of Figure 4-8. Picking Replace (on the Amiga it's spelled *Replc*) from the Mode menu eliminates the transparency of any background color in your brush; the brush will now float in an opaque block of the background color current when you created the brush. Try Replace with any custom brush to see how it works.

Bg->Fg and Bg<->Fg. Two other brush-color manipulations are available: Bg->Fg, which allows you to change the color of any part of the brush in the current background color to the current foreground color; and Bg<->Fg, which lets you swap the current

foreground and background colors (in the brush only). These options are found in the Amiga's Brush menu, and in the Apple IIGS's Color menu.

Use Bg->Fg to eliminate transparent areas in the brush, and use Bg<->Fg for quick color changes (negative to positive, and vice versa) or to make new areas transparent. Sample Bg->Fg and Bg<->Fg effects are shown at bottom left and right of Figure 4-8, respectively.

Custom Brushes and Another Palette

Custom brushes created while painting a picture use the same palette as the picture itself. What happens, however, when you want to use a brush created with a different palette? If you load it unaltered, it will take on the colors of your current palette, and these may look rather odd.

There are three ways of dealing with this situation. One is to convert your picture palette to the original brush palette. This can be done with a menu option called Use Brush Palette, which can be found in the Amiga's Picture menu and in the Apple IIGS's Color menu. But if you've already been drawing with the picture palette, that may not work for you.

The second way is to remap the colors of your brush to make them fit the current palette. The Remap option tries to match the original brush colors with similar colors in the current palette. This often does the trick.

But before you change your palette or remap your brush, take one more look at your oddly colored brush. It's not unlikely that the brush packs more impact in its new colors. Avoid being too conservative in your use of color. Try working with some oddly hued brushes, and you may discover new color possibilities.

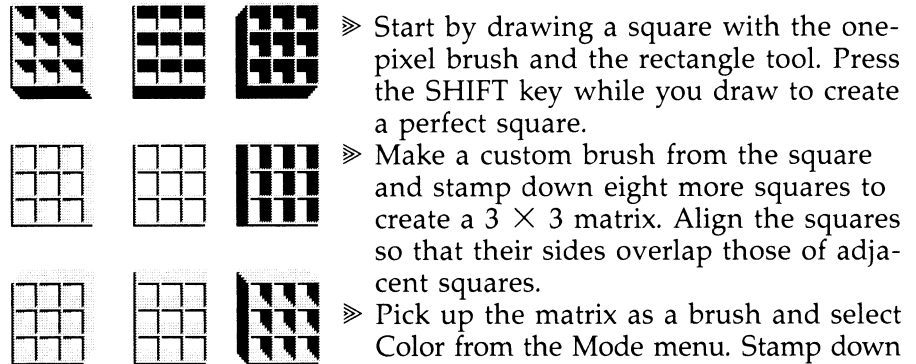
Note: With the IIGS version, the various color manipulations discussed above—foreground and background color switching and remapping—can be performed on entire pictures as well as on brushes. See the appropriate options in the Color menu.

Brush Techniques

A picture can have dozens or hundreds of layers of brushes. There's simply no limit to the complexity of the pictures that you can create with custom brushes. However, some of the most interesting and useful effects are made with relatively simple brushes.

Let's use one such simple brush to create the divided boxes in Figure 4-9.

Figure 4-9. Boxes



» Start by drawing a square with the one-pixel brush and the rectangle tool. Press the SHIFT key while you draw to create a perfect square.

» Make a custom brush from the square and stamp down eight more squares to create a 3×3 matrix. Align the squares so that their sides overlap those of adjacent squares.

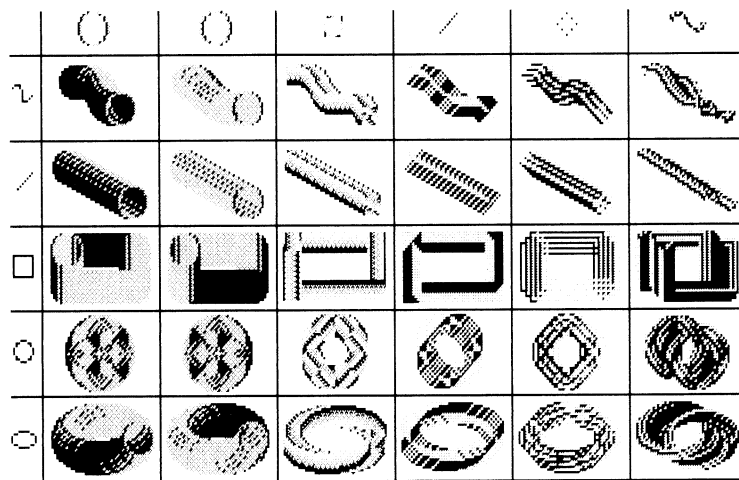
» Pick up the matrix as a brush and select Color from the Mode menu. Stamp down a copy of the brush in a dark color;

then stamp down another copy over the first, offset by one pixel up and to the right, in a lighter color.

» Now pick up the matrix as a brush and choose the straight-line tool. Drag the matrix in a straight line at 45-degree-angle increments to create the “three-dimensional” divided boxes. There are eight possible views: three seen from below, three seen from above, and one each to the right and left. Notice how the shading of the boxes changes according to the view. These divided boxes would be time-consuming (and boring) to render by hand, but are quick and easy to make with a simple custom brush.

Figure 4-10 shows just a few of the thousands of other shapes you can make with the drawing tools and simple custom brushes. These include such three-dimensional forms as wormholes, tubes, hollow beams, chutes, wire boxes, rosettes, toruses (donuts), and all kinds of ogees, half-rounds, and other decorative trim. To add instant shading to your brush, give it a dark side and a light one, or highlight bevels and angle changes with a contrasting color. Leave holes of the current background color in a simple brush to show the background through it, or use a dotted brush to produce a wireframed effect. Complex knotted forms can be made with a sine-curved (S-shaped) brush. Try making some of the shapes in Figure 4-10 and then do some experimenting on your own. The possibilities are limitless.

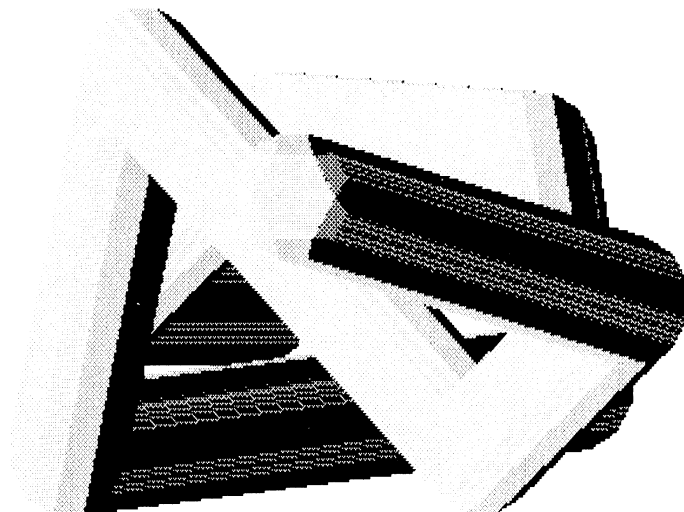
Figure 4-10. More Brush Forms



Brush Abstractions

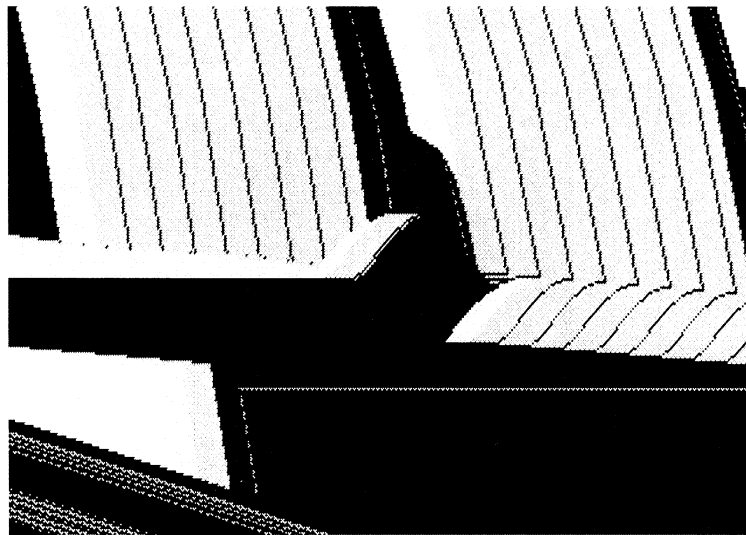
Two of the many ways to create abstract images with custom brushes are illustrated in Figures 4-11 and 4-12.

Figure 4-11. Polyhedral Form



- » To make this sculptural form, first draw a polyhedral shape like the one in the upper center of Figure 4-11. This will be your brush. (Or use any other simple shape with at least one light and one dark side.)
- » Now pick up the polyhedron as a brush and turn on the straight-line tool. Begin drawing at the rearmost part of your sculpture and work toward the front. You can copy the twists and turns of the form in Figure 4-11, or create your own sculpture. To give the form the appearance of weightiness, as though it were cast in bronze, try to imagine it sitting on a ground plane (you can draw in a ground plane if you like and erase it later). Make sure the form appears to rest on the ground, with several points of contact for stability. If you want the form to float in air, avoid giving it any points of contact with an imaginary ground.
- » You have a rendering of a modern sculpture that would look at home on the grounds of Apple or Commodore corporate headquarters. But let's jump to another level. Make sure you have enough available memory to pick up a nearly screen-sized brush. Then pick up the entire sculpture as a brush and draw with it using the straight-line or freehand-line tool. Draw slowly, because a brush of that size lags well behind the crosshairs. Figure 4-12 is just one of the many interesting compositions you can create in this way. You'll undoubtedly find one you like better.

Figure 4-12. Poly Abstract

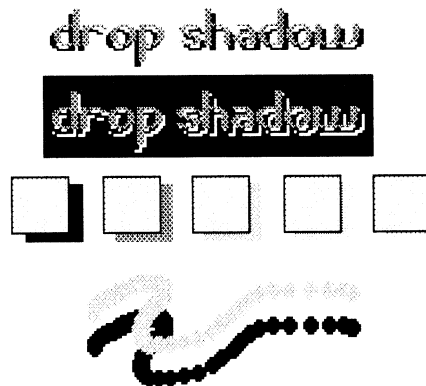


And you needn't stop there. You can keep jumping to higher levels of abstraction, creating new brushes out of the previous drawing and using them to create the next drawing. Use the same kind of manipulation at each level, or try something different. In this way, you can proceed from the microcosmic to the infinite.

Drop Shadows

The ever-popular drop shadow is much used in graphic design and lettering. Add a drop shadow to your brush and the brush will appear to float above the page. A few examples can be seen in Figure 4-13.

Figure 4-13. Drop Shadows



Creating drop shadows with *Deluxe Paint II* is child's play. You can always create a drop shadow of your custom brush in the background color by right-clicking, then moving your brush slightly, and clicking to stamp it down again in the regular brush colors. This works well if the background color is dark and the foreground field is light. Remember, though, if you plan to pick up both the brush and its

shadow as a new brush to move to another location, that the shadow is transparent. Make an opaque shadow in the current foreground color by choosing Color from the Modes menu, then stamping down the brush, and finally choosing Matte to restore the brush's original colors. This was done with the line of boxes in Figure 4-13. With this technique, you can make multiple shadows in different colors for a single brush.

As you experiment with drop shadows, you'll notice that the relative distance between the shadow and the object determines how far off the page the object seems to float. Make them too far apart, and the shadow may not read as a shadow anymore, but as a separate object. Offsetting the shadow creates the illusion of a light source coming from the opposite direction. For example, a shadow cast down and to the left implies a light source toward the upper right.

Drop shadows have their place, but use them sparingly. Often they confuse the image more than they clarify it. Reserve drop shadows for special occasions.

Brush Libraries

Many drawing and painting tasks require the repeated use of a few visual elements in different combinations. These tasks can be made far easier with brush libraries. Draw all the parts you'll need and save them on disk as brushes. Then, as you need them, load them from disk—you'll never have to draw them again.

Who can use brush libraries? The answer is, anyone who does art or illustration involving the repetition of picture parts. For example:

- » Architects can create libraries of architectural drafting symbols and rendered objects—trees; bushes; clouds; and brick, concrete, and stone textures.
- » Advertising artists can mock up ad layouts, comps, and color brochures using predrawn product and logo art, container designs, labels, gradient backgrounds, and zing words like *new!* and *improved!*
- » Comic-strip artists can store panel boxes, dialogue balloons, spaceship parts, explosions, “zaps,” “whams,” and “booms.”
- » Educators can use brush libraries to quickly make new illustrations for classroom use.
- » Fashion designers can build files of fabric patterns, garment designs, faces, figures, jewelry, and accessories.
- » Mechanical designers can save mechanical-drafting symbols and renderings of product parts: screws, gears, moldings, housings, wheels, handles, and controls.
- » Scientific and medical illustrators can store libraries of renderings in their specialty, from planets to plastic surgery.
- » Set designers can use predrawn backdrops, curtains, figures, and costumes to sketch out new designs.

Figure 4-14 and 4-15 give just two examples of the use of brush libraries. In Figure 4-14, four shaded balls representing four different kinds of atoms are combined into a picture of the active site of an enzyme. The molecule balls are slightly overlapped and squashed together to show molecular bonds. Using different combinations of size, color, and shape, you could make a brush representing each element and then construct a two-dimensional model of any molecule.

Figure 4-14. Molecule

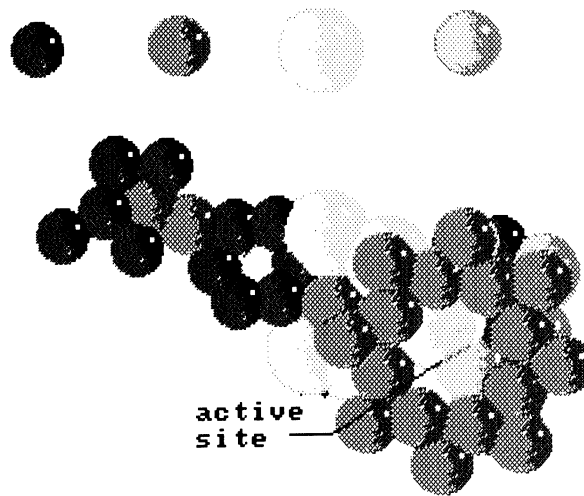
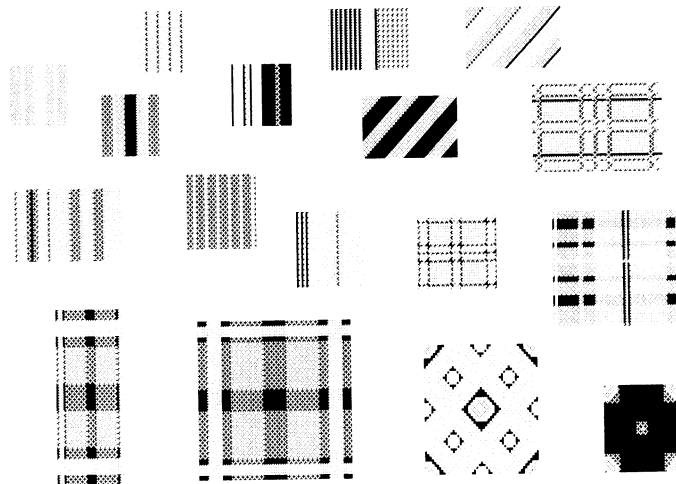


Figure 4-15 is part of a library of fabric patterns, with stripes, plaids, and foulards. These can be picked up and used to fill the outline of a shirt or dress, affording you the ability to see what pattern will work best with your design.

Figure 4-15. Fabric Pattern Library



For more on using *Deluxe Paint II* to create libraries of patterns, turn to Chapter 9.

Clip Art

Artists and designers in a hurry often make use of *clip art*, ready-made images that can be used in a variety of designs and art. Those cartoons of happy shoppers which appear on every supermarket circular are clip art, for example.

Several disks of *Deluxe Paint II* clip art, including some useful brush libraries, are already available for the Amiga, and should soon be available for the Apple IIGS. Much of this art is distributed by Electronic Arts, but more can be found in public domain software collections. Make use of clip art as you need it, but remember that clip art lacks your personal touch and inspiration. It's also good form to give credit to the artist whose work you are using.

You'll be using custom brushes in every project in this book, and constantly as you travel on toward *Deluxe Paint II* mastery. Other *Deluxe Paint II* features you'll use regularly are the palette controls, discussed in the next chapter.



T

hough we rarely think about color in an analytical way, we're profoundly affected by it and depend on the information colors give us to make our way in the world. In our visual memory, color is the key to emotional reactions based on experience and expectation. A ripe red apple, for example, if it were dyed bright blue, would be unpalatable to most people. Colors help us estimate how near or far any object is and whether it will be warm or cool to the touch. The colors of the landscape tell us the season, the climate and weather, the time of day, even the latitude we are in. In one another's faces, we see colors as indicators of age, health, and emotion. The colors of a painting disturb us or give us pleasure, according to the artist's intention and level of skill.

As an artist, you can use color to set the psychological tone of your painting, making it intimate or aloof, soothing or angry. The adroit use of color can give the appearance of great depth to a flat piece of canvas; can make shapes seem to jump, vibrate, and swim; or can create an image that hits the viewer with the force of a blow.

Take one common example, illustrated in Figures 5-1 and 5-2. These figures show the same riverine landscape, shaded in different ways. In Figure 5-1, the gray tones are deep and strong in the foreground, pale in the background. This progression is one way to create the illusion of depth within a picture. Psychologically, we expect deep colors to be nearer, faded colors to be far away. The illusion is enhanced if the nearer colors are warm—shades of red, orange, yellow—and the farther colors are cool—pale pastels of blue, brown, and green.

These color expectations can be turned on their heads, as they are in Figure 5-2. Now the foreground is pale and cool, the background dark and warm. This landscape seems to have much less depth than the first one. The lighting is different, too; the foreground appears to be illuminated by a strong, bleaching light, while the far mountains seem to be in shadow, perhaps under clouds. Both approaches are valid, for each creates a different space and feeling within the picture.

Figure 5-1. Landscape 1

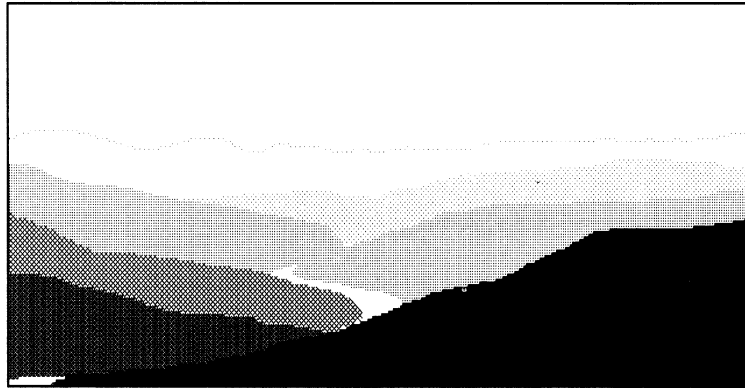
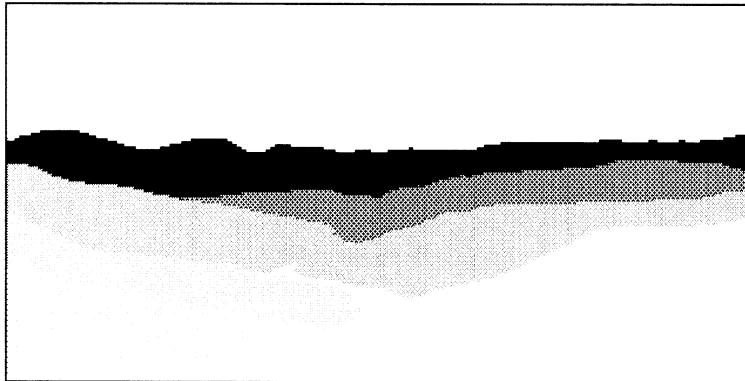


Figure 5-2. Landscape 2



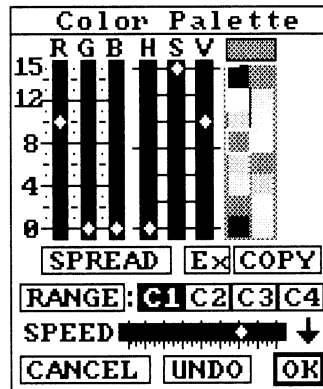
The Palette Controls

Deluxe Paint II gives you access to the world of color—the 4096 colors your computer can generate—through its palette-control features. Right-click on the color indicator in the toolbox palette or choose Palette from the Picture menu to bring up the Color Palette box. Figure 5-3 illustrates the Amiga Color Palette box, and Figure 5-4 shows the Apple IIGS Color Palette box.

The Palette box contains *Deluxe Paint II*'s most complicated set of controls, so let's examine it in detail.

At the top right is a copy of the toolbox palette showing all the current colors. Select colors from it in the usual way. The selected

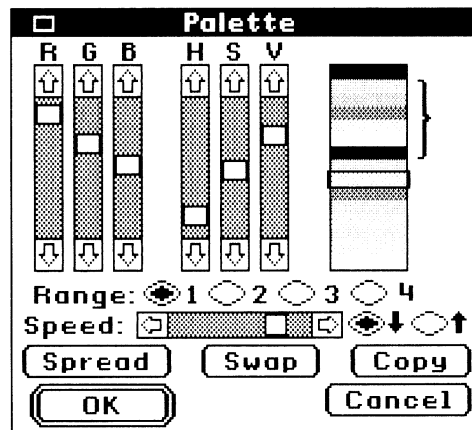
Figure 5-3. Amiga Palette Box



color is highlighted and also shown in the wider box at the top. The colors are numbered starting from zero (in the Amiga Palette box, the numbering begins at the upper left and runs down each row, although the Palette box doesn't show this). Actually, it's the color positions that are numbered, not the colors themselves. When the *Deluxe Paint II* manual talks about *color 11*, it means the color at position 11.

Note that colors 1 and 2 in the Amiga and 1 and 16 in the IIGS (default settings: black and a creamy off-white) are the colors *Deluxe Paint II* uses to

Figure 5-4. Apple IIGs Palette Box



create the toolbox, menus, and the various boxes, including the Palette box. Setting these colors to the same shade will render those features invisible. Unless you like groping about blindly, click on UNDO or Cancel to restore the default settings.

At the top left are two sets of sliding controls (*scroll boxes* in IIGS jargon) for varying colors. One set of

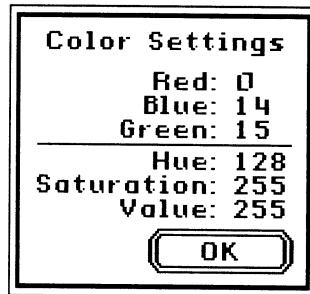
controls lets you set the amount of red (R), green (G), and blue (B) in the selected color. The other set of controls specifies the hue (H), the saturation (S), and the value (V) of the selected color.

Hue/Saturation/Value

The *hue* slider lets you stroll through the spectrum from violet to red. The *saturation* slider adds white to the color. The *value* slider adds black. In the Amiga version, each sliding scale is calibrated in 16 increments, from 0 to 15. Any color can be described by three numbers in either scale. For example, the selected color (a red) in

Figure 5-3 is 10-0-0 on the RGB scales and 0-15-10 on the HSV scales. The IIGS displays color numerical values in a Color Settings box, called by pressing the N key.

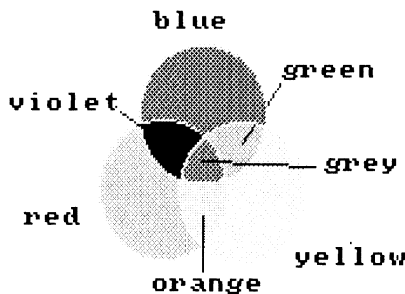
Figure 5-5. Color Settings Box



Take a few minutes to experiment with each set of controls. Pick any color and turn it into spruce green, sky blue, and lemon yellow. Watch how moving each set of sliders affects not only the color, but also the position of the sliders in the other set of controls.

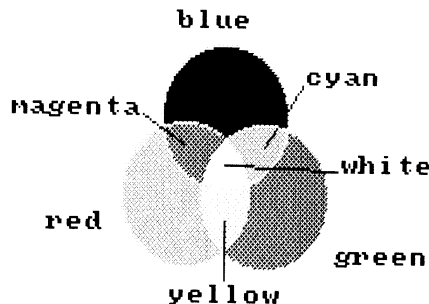
Now load any picture (if you don't have one onscreen already). Notice that the colors in the picture change as you play with the palette controls. You can make global changes—that is, changes that affect the entire picture—in the color of your work at any time, even after the painting is "finished."

Figure 5-6. Red-Yellow-Blue Color Wheel



Figures 5-6 and 5-7 will help you understand how the RGB system of color mixing works. Figure 5-6 shows the color-mixing system everyone learned in grammar school, the one used when mixing paint. In this system, red, yellow, and blue are the primary colors from which all other colors are made. To make green, for in-

Figure 5-7. The Red-Green-Blue Color Wheel



stance, you mix yellow and blue in equal proportions.

In *Deluxe Paint II*, things are different. As you can see from Figure 5-7, the primary colors of *Deluxe Paint II* are red, green, and blue. Yellow is made by mixing green and blue. (Check it yourself with the RGB controls.) This system seems illogical to most people

when they first encounter it. Until you learn it, you may feel more comfortable using the HSV controls. Forget your color preconceptions, however, and you'll soon find that the RGB system seems just as natural as the RYB system.

Other Palette Controls

The Palette box also contains controls for moving colors around in the palette and for creating special groups of colors.

The Amiga's Ex and the IIGS's Swap features exchange one color with another. Select any color, click on Ex or Swap, select the second color, and their positions will reverse. Use Copy in the same way to copy the selected color to another position.

Spreads

Spread is perhaps the most useful of the special palette controls. Using Spread, you can choose two different colors and create a bridge of intermediate shades between them. For example, to make a spread of flesh tones, first create two colors that you want the spread to be between—say, a dark brown and a light pink. The number of positions between these end colors will determine how many colors will be in between. The fewer positions, the more abrupt will be the transition between the colors in the spread. More positions will yield a spread of gently graded colors.

Try setting your colors 10 positions apart. Now select one end color, click on the Spread gadget, and select the other end color. Instantly you have a smooth series of 12 flesh tones. Creating the same precisely graded colors with oil paint would take an hour or two of calculation, mixing, and experimentation—not to mention considerable experience.

Here's a challenging exercise that makes use of the palette controls and Spread. Find good quality reproductions of the work of three of your favorite painters—say, Rembrandt, Pierre Bonnard, and Stuart Davis—who use very different color schemes in their work. See how closely you can reproduce these artists' palettes with *Deluxe Paint II*. In many paintings there are only a few key colors, with intermediate shades grouped around them. Once you have identified and mixed the key colors, you can use them to create spreads. (You'll find it convenient to use a system of key colors and spreads when creating your own palettes, as well.) Although you can't match the artist's palette exactly—you don't have as many available colors—you can get remarkably close. If you like,

you can try to copy a painting with the *Deluxe Paint II* palette, noting how the artist uses color to model shapes and to create links and tensions among various parts of the picture.

Another use of Spread is to automatically make exact percentages of colors. As shown in Figure 5-8 (the Amiga palette is pictured), it's easy to get gray tones in increments of 20 percent by creating a four-position spread between black (100 percent) and white (0 percent). A spread with 11 positions (including black and white) yields grays in 10 percent increments. The same applies to any color spread. A three-position spread between red and blue yields five colors—red (100 percent red, 0 percent blue), red-violet (75 percent red, 25 percent blue), violet (50 percent red, 50 percent blue), blue-violet (25 percent red, 75 percent blue), and blue (0 percent red, 100 percent blue).

Figure 5-8. A Spread of Grays

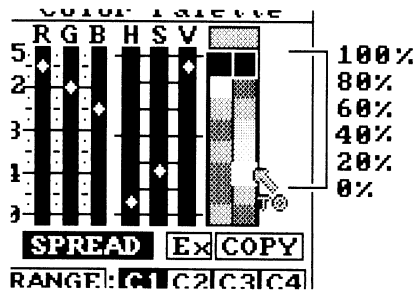
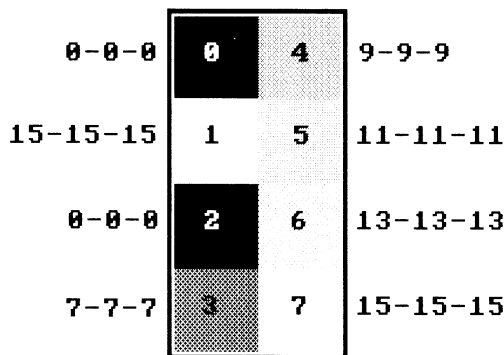


Figure 5-9. Gray Spread for This Book



A spread of four *Deluxe Paint II* gray tones corresponds to printable ATEX dot patterns—RGB settings 7-7-7, 9-9-9, 11-11-11, 13-13-13, plus 0-0-0 (black) and 15-15-15 (white). It was necessary to set this palette only once, for a

This capability is very helpful when you must prepare illustrations for publication. With a good monitor and a little effort, you can match rather closely the gray and color values commonly used for printer's inks.

The illustrations for this book were created using a special spread, shown in Figure 5-9. Each figure was transferred from an Amiga (via an Atari ST) to an ATEX typesetting system. The ATEX is capable of generating a limited number of grays by using patterns of dots, as you can see by looking closely at Figure 5-9. A spread of four *Deluxe Paint II* gray tones corresponds to printable

blank template picture stored in a separate file. Each figure was started by loading the template, with its palette ready-made, and saving the finished figure in a numbered file.

Ranges

Ranges are colors grouped together for a special purpose. Unlike spreads, ranges need not be made of related colors. To define a range on the Amiga, select the first color in the range, click on the Range gadget in the Palette box, and then click on the last color in the range. All the colors in between are now in the range. To define a range on the IIGS, click on one of the radio buttons and then drag the bracket that appears next to the colors so that all the colors you want in the range are included. Up to four range channels can coexist at a time, and the channels can share colors. Notice that the range of the currently selected channel is enclosed by brackets. Activate a range from the toolbox palette by selecting any color in that range.

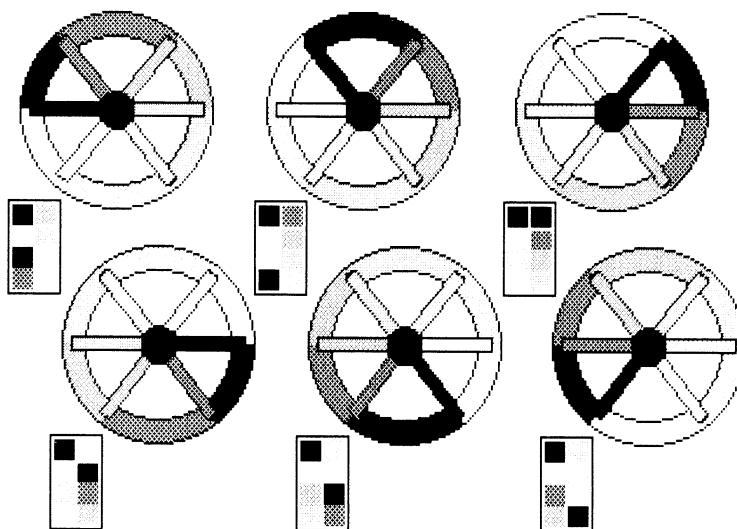
What are ranges used for? Several of *Deluxe Paint II*'s more impressive features require you to specify a range, including gradient fill; the blend, shade, and cycle draw options in the Mode menu; and color cycling. These features all use only the colors in the currently selected range. You'll learn more about gradients and the painting modes in the next chapter.

Color Cycling

An extensive tutorial in the *Deluxe Paint II* manual covers the basics of color cycling. You've probably tried the color cycling brushes on the *Deluxe Paint II* disk, but if not, try them now. First select any color in the current range from the toolbox palette and then choose Cycle from the Picture menu (or just press TAB on the keyboard). The colors in the brushes (and in any other part of the page using the range colors) now automatically step through their ranges. Cycling speed is adjusted with the speed slider in the Palette box: left for slow, right for fast. As the speed increases, the brushes begin to pulse and move. The highest speed setting generates a strobe effect that can be a little disorienting. You can change the cycle direction by clicking on the small arrow to the right of the Speed slider. To cycle all the channels through their ranges at once, choose MultiCycle from the Amiga's Prefs menu or the Apple IIGS's Modes menu.

Color cycling can be used to create simple repetitive animations. Figure 5-10 demonstrates one way to make a spoked wheel turn.

Figure 5-10. Turning Wheel



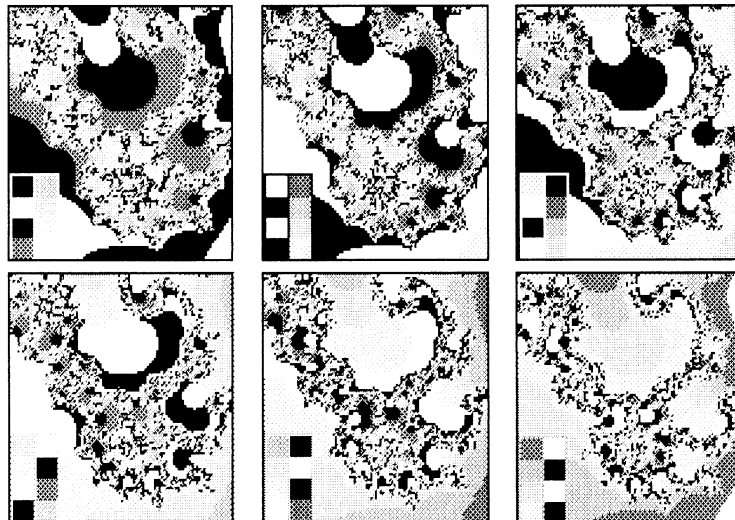
- » First, set the palette. Create a spread of six colors from dark to light and then make this spread a range on channel 1.
- » Draw the wheel using the circle and straight-line tools. The wheel has six wheel sections and six spokes. Fill in the sections with successive colors in the range. Each spoke is attached to a wheel section of the same color. The hub is filled with a color not in the range, so it won't cycle.
- » Hit the TAB key to start cycling. The wheel appears to turn. Figure 5-10 shows the six stages of the cycle, with the small palettes indicating how the colors move through the cycle at each stage. Adjust the Speed slider to make the wheel turn faster or slower. Flip the cycle-direction arrow up or down to reverse the direction of spin.

You can use this technique to animate the wheels of a wagon, car, or locomotive. Other simple animations can be brought to life with color cycling, such as making water run, a crankshaft turn, wings flap, signs flash, dials flicker, rain or snow fall, dust rise, lightning flash, eyes blink, or leaves tremble. Because different ranges can cycle at the same time (using multicycling), several kinds of movement can happen at once. For example, you could

paint a night scene with stars twinkling and the wind rustling through the grass, or an arctic landscape with the aurora borealis pulsing overhead, sending gleams off the ice.

Cycling can also be helpful in understanding the structures of complex images imported from other programs. Figure 5-11 illustrates a case in point. The six boxes show a color-cycled detail of the Mandelbrot set, a mathematical entity first described in the mid-1970s by Benoit Mandelbrot. You may know these images by their more common name of *fractals*. Fractals are forms that are similar in structure at any level of magnification. A typical example of a fractal in nature is a coastline, which has much the same kind of ragged, seemingly random edge whether seen from space or from six feet above the ground. Several public domain programs exist for the Amiga that enable you to create fractal imagery and save it in the *Deluxe Paint II* file format. (The best of these is "Mandelbrot Explorer" by Thomas Wilcox.) Similar programs should soon appear for the Apple IIGS.

Figure 5-11. Mandelbrot Cycling



Fractals are fascinating to investigate for their own sake, but they're intricate, and it's often difficult to see exactly what's going on in them. Color cycling can help to reveal their swirling internal patterns. Reading the six stages of Figure 5-11 left to right by row, you can see large and small cyclones throughout the image. These rotations are much more apparent when you see them with the

motion imparted by color cycling than when you see them as static patterns.

Fractals can be the source of striking *Deluxe Paint II* images. Use them as vividly colored backgrounds to simulate distant landscape features or microscopic environments, or pick them up as brushes and multiply them all over the page. Figures 7-1, 7-2, and 8-11 use fractal patterns as planet surfaces.

Using Color Effectively

The aesthetics and psychology of color is a vast subject, well beyond the scope of this book. But the few guidelines below may come in handy, especially if you're just starting out.

Don't use color randomly. Some colors go well together, and others don't. Colors that work against one another will probably work against your picture as well. For example, putting certain primary colors, such as red and green, next to each other creates a color vibration along the border between them. Unless your work falls into the op-art/psychedelic-poster category, this vibration is likely to be more distracting than interesting. Likewise, the border between two colors of very similar value is rather hard to see. This is good when you want to make a subtle color transition, not so good when you want your viewers to discern the outlines of your image. Be especially concerned about color contrast and edge definition when you're putting text over color.

Use a varied palette. The exclusive use of light pastels makes for dull, wishy-washy pictures. Work entirely in vivid primaries tends to look simpleminded.

Be alert to the psychological connotations of colors. Saturated colors are bold and dramatic and tend to sit "up front" on the picture plane. Bright yellow, in particular, stands out a mile and should be used sparingly. Cold blues, greens, and grays will give your picture a distant, melancholy look.

Avoid the obvious. Everybody knows that grass is green—but is it? Look closely and you'll see that different kinds of grasses are different colors of green. That grass in the shade is a different color than grass in the sun. That grass near a red flower picks up some of that red. That grass in the distance can be blue, yellow, or brown.

When appropriate, use the minimum number of colors which will convey the information. For practical graphics, such as technical drawings, charts, graphs, and maps, keep this in mind. Extra colors can add unnecessary complexity to a picture and complicate your message as well.

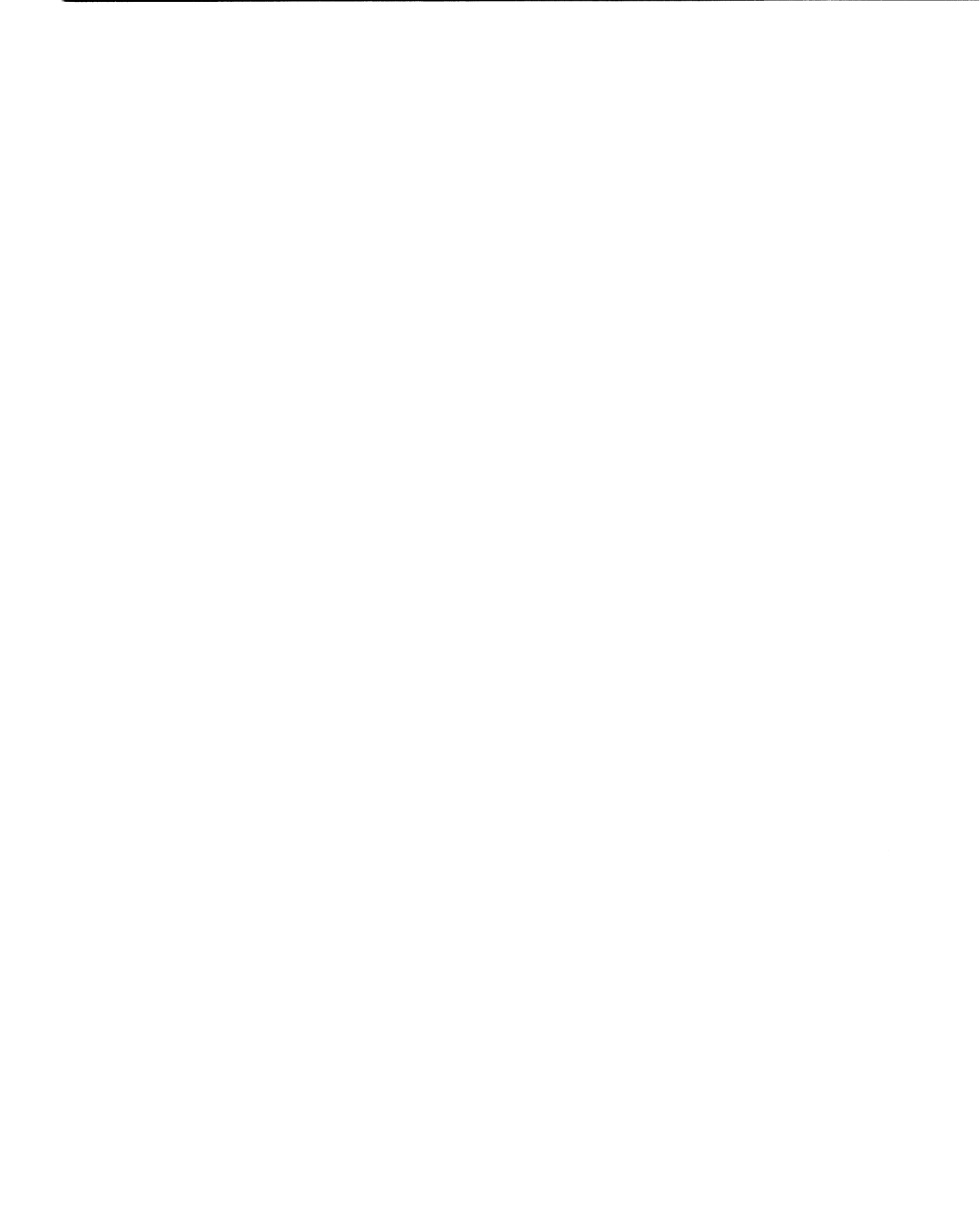
Don't forget to break the rules. These suggestions on color, and any others you may come across, can be helpful, but there will be plenty of times when they'll be dead wrong. When in doubt, trust your instincts and learn by your own experience.

With the basics of drawing, brushes, and color under your belt, you're ready to explore *Deluxe Paint II's* more advanced painting tools. We'll look at these in the next chapter.



CHAPTER 6

Painting Tools and Techniques



Each graphic medium has its own character. An oil painting possesses a rich, velvety surface and deep, glowing colors. In contrast, an acrylic painting looks brash and flat. Watercolor, with its subtle washes and transparent color, lends itself to soft textures and atmospheric effects. The smooth gradations of shading and color possible with an airbrush give an airbrushed picture a slick, mechanical look, suitable for rendering man-made forms. An ink drawing combines a hard line with watercolor subtlety, while charcoal and pastel chalk possess a rough, appealing texture.

Deluxe Paint II contains a wide assortment of painting tools that make it possible to achieve the visual effects of many traditional media. You can create paintings with the look of acrylics, watercolors, airbrush work, pastels, charcoal, and pen-and-ink wash. And you can combine different media in one image.

Airbrush Techniques

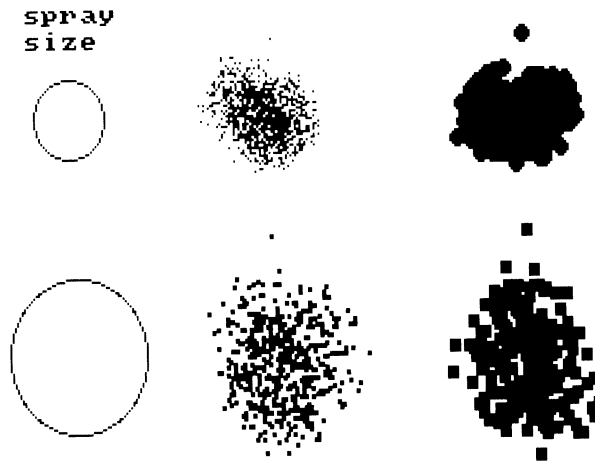
Deluxe Paint II's airbrush is a versatile tool capable of a variety of effects. Most commonly you'll use it for the same tasks you'd use a real airbrush for—creating the gradual transitions between colors that are characteristic of rounded, smooth, and shiny surfaces. But *Deluxe Paint II's* airbrush can also quickly spray multiples of any complex image across the page, something no traditional airbrush can do. And the airbrush can be used to simulate the look of charcoal and pastel drawing.

You'll find the airbrush-tool icon next to the fill-tool icon in the toolbox. To use the airbrush, select it, and then select any built-in brush and color. As you paint with it, the airbrush deposits a random spray of brush blots under the crosshairs. The longer you hold down the mouse button, the more blots will be deposited. If you hold the airbrush stationary, it will eventually fill up the area under the crosshairs. As with other *Deluxe Paint II* painting tools, left-drag the airbrush to paint with the foreground color, right-drag to paint with the background color.

You can adjust the diameter of the spray, just as you can with

a real airbrush. Right-select the airbrush tool to call up the airbrush spray size gadget. This looks and works just like the built-in brush size gadget. Drag the circle until it's the size you want. Figure 6-1 gives you an idea of the difference between a small-diameter spray and a large-diameter spray.

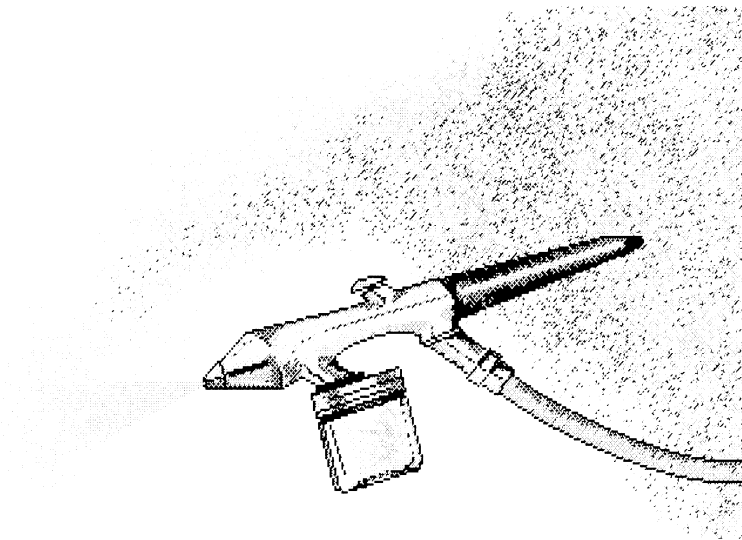
Figure 6-1. Airbrush Sprays



Although the airbrush sprays out blots of paint rapidly (and at a rate that's not adjustable), it moves rather slowly across the page, lagging behind the crosshairs. It's a bit of an art to move the airbrush fast enough to lay down an even spray along the brush path, but slow enough that the brush won't take any shortcuts to keep up with the crosshairs. Some practice now with various sprays and brush sizes will pay off in better control later.

The kind of blended area you can create with the airbrush is shown in Figure 6-2. Such areas make good neutral backgrounds; you can subtly vary the lightness and darkness in any part of the background while maintaining a generally smooth texture over the whole area. This degree of control is one reason to use the airbrush for neutral backgrounds rather than the gradient-fill feature, which gives somewhat similar results. (We'll be covering gradients later in this chapter.) Gradient-filled backgrounds are perfectly uniform and lacking in character, while an airbrushed background can be tailored to the individual needs of the picture. The tradeoff is that creating a large, smoothly airbrushed area isn't that easy. Try to make one now, and you'll see why. It's difficult not to overpaint in one part and underpaint in another. Remember that you can always erase an airbrushed area by painting with the background color.

Figure 6-2. Airbrushing

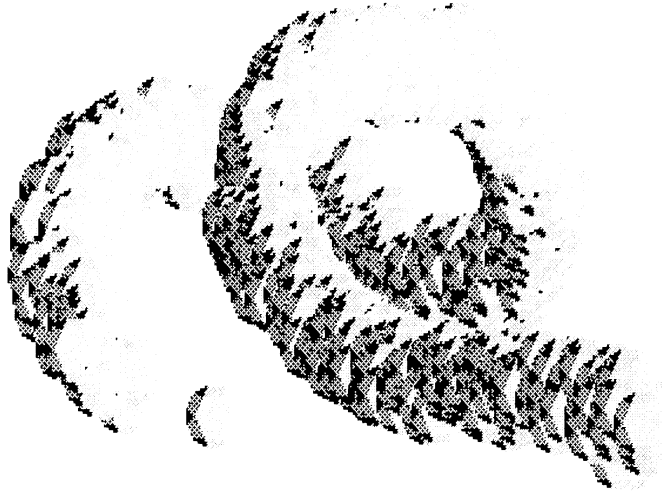


Most of the shading and shiny highlights on the “old-fashioned” airbrush depicted in Figure 6-2 have been painted with the airbrush set to a small diameter and using a one-pixel brush. Since the placement of individual blots by the airbrush is random within the spray diameter, it’s easy to spray paint into areas where you don’t want it to go, especially when working in tight corners. You’ll often have to take a small eraser and clean up after the airbrush. (*Deluxe Paint II*’s Stencil feature will help you confine the airbrush spray only to the areas you want to paint. See Chapter 7 for a discussion of stenciling.)

The airbrush is not restricted to using the built-in brushes—any custom brush can be airbrushed, too. The small polyhedron in Figure 6-3 has been fed through a small-diameter airbrush. This is useful for building up layers of small images—for example, clumps of leaves on a tree, sprays of roses on a rosebush, or rising bubbles in a champagne glass.

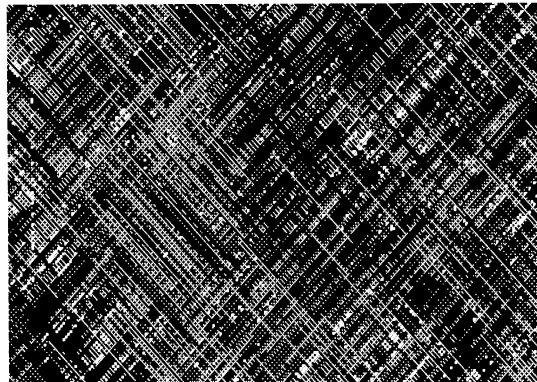
Try drawing a small leaf, picking it up as a brush, and airbrushing leaf clusters on a tree trunk. A relatively narrow-diameter airbrush works best for this. After you’ve airbrushed in the leaves, go back into the picture and change some of the leaves to make them look less uniform and more organic. You can also use the airbrush to pile leaf upon leaf in a massive pile. Extremely complex, multilevel abstractions can be built in this way.

Figure 6-3. Airbrushed Polyhedrons



Thatched, crisscross patterns like the one in Figure 6-4 are simple to create with the airbrush. The brush used is a straight line at a 45-degree angle. Successive layers are built up by airbrushing the line in light and dark colors (use Color in the Mode menu to change a brush to the current foreground color) and flipping it alternately to the left and to the right.

Figure 6-4. Thatch



Set the airbrush to small diameters to simulate the stroke of a broad piece of charcoal or pastel chalk. Figure 6-5 shows some sample chalk strokes.

Figure 6-5. Sample Chalk Strokes



Figure 6-6. Waterfall



Try this for yourself. Use highly saturated colors and fluid mouse movements to give your picture the appealing spontaneity of a pastel.

To achieve the appearance of a charcoal drawing, use a range of grays, as in the waterfall in Figure 6-6. The waterfall and cliffs are rendered with a narrow-diameter airbrush spraying a one-pixel, built-in brush—a few lines with the freehand drawing tool help to define the rocks and add ripples to the pool below.

Gradients

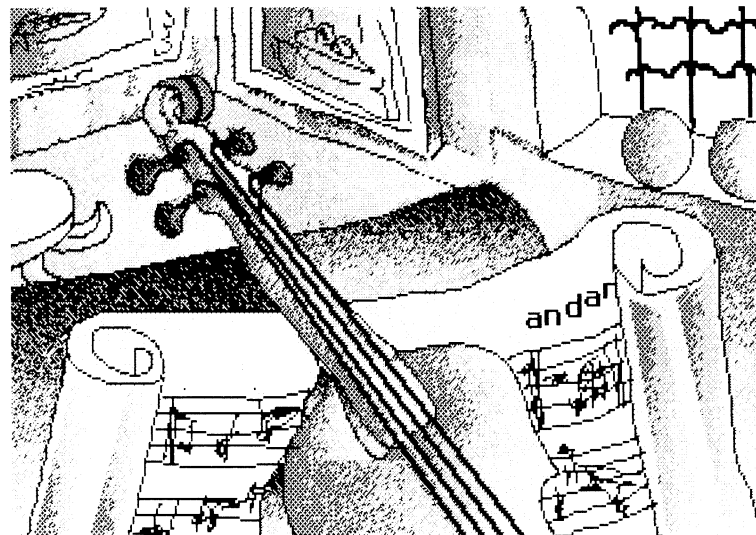
Gradient fill is a fill-tool option, as you'll recall from Chapter 3. What gradient fill does, in essence, is provide you with an automatic way to create perfectly shaded areas. While it's difficult to paint a perfectly uniform color or value transition over a large area with the airbrush, the same task is easy with gradient fill. In that sense, gradient fill is a supplement to the airbrush.

Let's do some experimenting with a few gradient effects. Set a range of colors with the palette controls and then choose one color in the range. Right-select the fill tool to call up the fill requester. Set the gradient feature to vertical or horizontal gradient; then click OK.

Try drawing a few boxes and other solid shapes. They'll fill with the range of colors you've selected. Drag the gradient slider to the left for a layered look, or to the right for a blend with no discernable transition between colors. Flip the range arrow up and down to vary the direction of the gradient.

Another use of gradients is seen in the still life in Figure 6-7. Here the gradient areas, mostly filled polygons, look almost like cutouts superimposed over the basic drawing. The painting as a whole subtly resembles a paper collage. Note the relaxed character of the drawing. Computer art does not have to be tight and photorealistic.

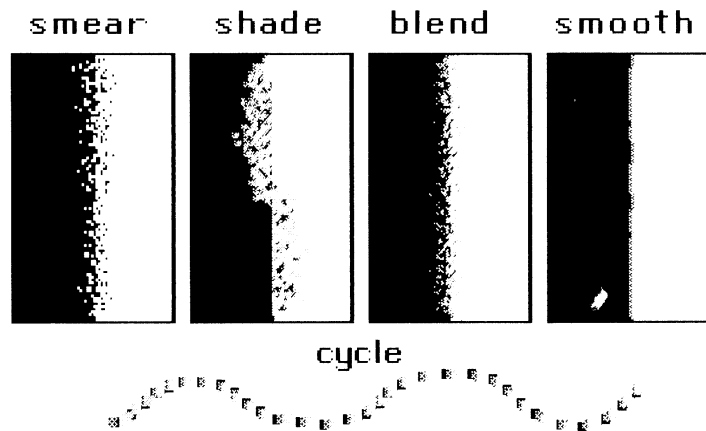
Figure 6-7. Violin



The Painting Modes

Deluxe Paint II's most painterly effects are available from the Mode menu. You've already used three of its options—Matte, Color, and Replace—in the custom-brush exercises in Chapter 4. The other painting modes are Smear, Shade, Blend, Cycle Draw, and Smooth. Figure 6-8 illustrates what each mode does.

Figure 6-8. Painting Modes



Smear

Smear lets you smudge two color areas together, as though you were rubbing a chalk drawing with your finger or scumbling together two wet areas of paint. It's easy to use. Select the Smear option and then any size built-in or custom brush. When you drag the brush over the boundary between two colors, say from red into blue, it will pull some red into the blue area. Pass back from blue to red, and some blue is pulled along with the brush. Drag back and forth along the boundary to completely smudge it up.

A small fine brush leaves a narrow smear, while a wide brush leaves a broad, coarse smear. You can use Smear to help in achieving a pastel effect, to aid in modeling dull-surfaced objects, to feather the edges of ill-defined subjects like clouds, mist, and distant foliage, and to render rough surfaces like rust.

Shade

The Shade mode is more complicated to use. It requires that you specify a color range. When you paint with shade over an area in a color that belongs to the range, your brush will deposit the range color above (by dragging) or below (by right-dragging) it. Select a foreground color outside the range, and Shade will use the entire palette as a range.

Blend

Blend also uses colors in a range. Passing a Blend brush over a color boundary will soften it by adding intermediate colors from the range. As with Shade, select a foreground color outside the range to use the entire palette as a range. Blend creates beautiful watercolorlike transitions and washes, especially if you choose a large brush (including a custom brush) to paint a wide blended swath.

Cycle Draw

Cycle Draw causes your brush to cycle through the current range (if the foreground color is in that range). This is shown at the bottom of Figure 6-8. You can cycle draw with all the colors in a custom brush by selecting Multicycle.

Smooth

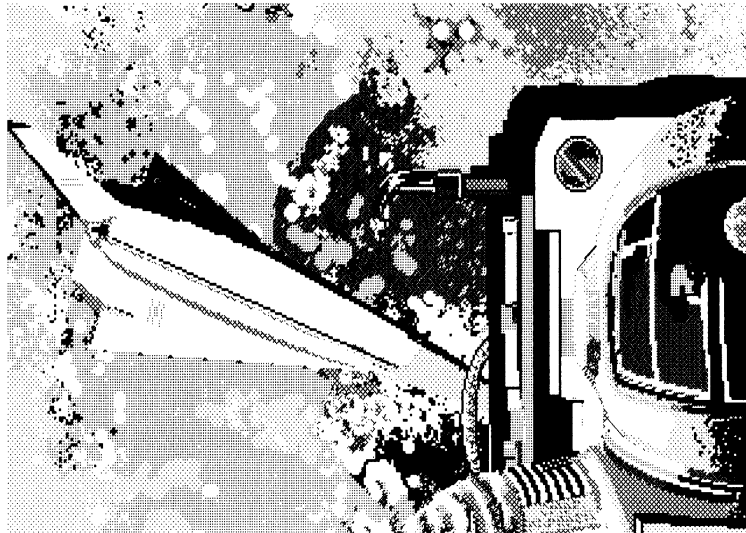
Smooth yields the subtlest transition across color boundaries. It looks at the whole palette to find the closest average between the boundary colors under the brush. Smooth lays down a thin line of three intermediate colors along that border to create a very smooth transition, perfect for rendering slick, shiny surfaces and for ink or watercolor washes. Smooth also tends to average out ragged irregular outlines, and thus is useful for combating pronounced stair-casing. Smoothing a slanted edge, such as that of an airplane wing, will make the edge look straighter, if less sharp.

Using the Painting Modes

The following figures show just a few of the many painterly effects you can achieve with the painting modes.

The space scene in Figure 6-9 demonstrates the use of Smear and Shade. The earth background, especially the clouds, was smeared with a large circular built-in brush to achieve a cottony look and then was smeared again with a smaller brush to fray the cloud edges. Smear was also used to model the astronaut's helmet and shoulder. The landscape colors were translated up and down with Shade to create other subtle variations in shading. Some areas in the spaceplane and the astronaut's visor were rendered with the Smooth feature.

Figure 6-9. Astronaut



Combining Smear and Blend with a supple black line, as in Figure 6-10, yields the look of an ink drawing made with pen and brush. To recreate this painting of a hawk, first draw the outline of the hawk and some details of the plumage with small built-in brushes; then fill the outline with the main colors. The individual feathers are first drawn with built-in brushes and then are smeared and blended for a soft appearance. Notice the different kinds of feathers—upright and curled on the crest, fine and closely layered on the head and neck, coarser and with curved markings on the breast. A horizontal gradient adds interest to the background and brings out the forward thrust of the head and beak. The sixteen-color version of this painting uses the following colors: black (RGB 0-0-0); white (RGB 15-15-15); a spread of medium grays for the gradient background (RGB 7-7-7 to RGB 13-13-13); bright yellow

for the eye (RGB 15-14-0); a light beige for the beak (RGB 15-12-10); a spread of browns (RGB 12-8-4 to RGB 4-3-0) for the darker plumage and the breast; and a spread of red-browns (RGB 15-9-5 to RGB 12-0-0) for the crest, forebeak, and a ring around the neck.

Figure 6-10. Hawk

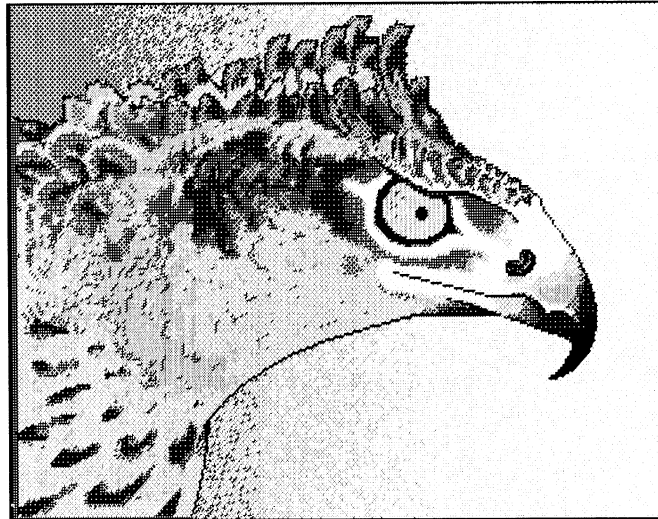


Figure 6-11. Dogwood

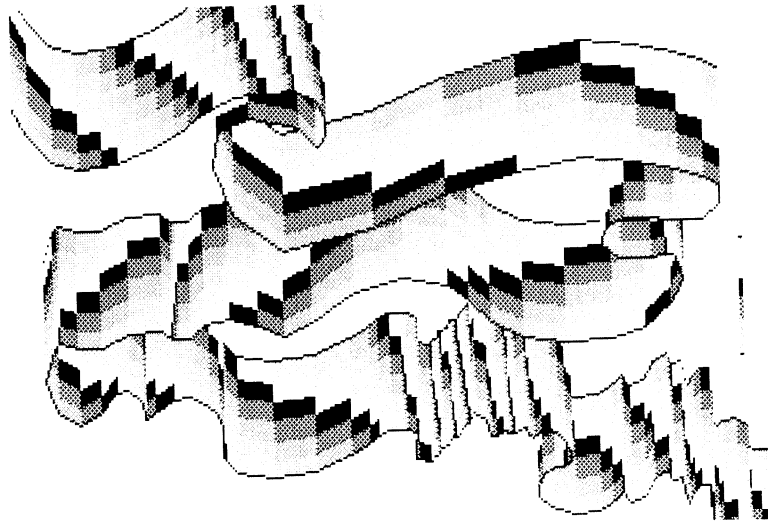


The delicate watercolor-like shading of the dogwood blossom in Figure 6-11 is created with Blend and Smooth. The striations on the petals are achieved by running a small built-in brush along them with the Blend feature on. For realistic coloring, use a spread of pinks (RGB 13-4-4 to RGB 15-13-12) plus a dark and light green for the center (RGB 0-6-0 and RGB 6-12-8) and dark brown for the stem (RGB 3-1-0).

The flying ribbon in Figure 6-12 is easy to make with Cycle and Multicycle. A single custom brush is used—a short vertical line with six colors, with a black “cap” at each end. You can see the brush in the middle of the right-hand border. The six colors (but not the black caps) are a cycle range. To draw the ribbon, pick up the brush, select Cycle and Multicycle, and then the freehand-line

tool. As you move the brush, each color cycles independently throughout the range. Note that this extra calculation makes the brush lag behind the crosshairs when you move quickly. Paint slowly for closely spaced cycle intervals, quickly for widely spaced ones. Try this for yourself with this brush and other multicolored simple brushes. The results are fascinating. Note that with the IIGS version you can't restore the brush's original colors after using Multicycle; make sure to save the brush before you paint.

Figure 6-12. Cycle Ribbon



Other Painting Techniques

Two more painting techniques are worth mentioning. One is the use of brushes to create the illusion of motion, as in Figure 6-13. Here the basketball player is roughly drawn with a combination of built-in brushes, airbrush chalk strokes, and smearing. Then the entire figure is picked up as a brush and dragged from lower right to midpage. The trails left by the brush are reminiscent of a long-exposure photograph of a body in motion, and lead the eye to the focus of action—the player's hand tipping the ball toward the hoop. The picture's broad, flat areas of color have some of the feeling of acrylic paint, often used by sports illustrators for their bright colors and ease of application.

Figure 6-13. Basket



Brushes can also be used to create image “collages.” You can clip images out of old work—as well as from clip art libraries and other noncopyrighted sources—and store them in a separate file for possible future use. This is analogous to the collage artist’s clipping and filing potentially useful magazine photos, old prints, wallpaper patterns, newspaper articles, and the like. Figure 6-14 incorporates several brushes used elsewhere in this book. The meaning of the correspondences among the various images is left for the viewer to decipher. It’s a revitalizing exercise to trot out old parts of drawings and recombine them in new ways—a trick artists have always turned to, but one made far easier with *Deluxe Paint II*.



CHAPTER 7

Drawing and Painting Aids



One of the best reasons to use *Deluxe Paint II* is that it has many helpful features which can make graphic creation faster, easier, and more sure of success. *Deluxe Paint II* has a built-in magnifying glass to augment your own eyes, a drafting machine to help you make perfectly aligned and proportioned technical drawings, a stenciler to prevent you from painting over an area you want to keep intact, an ever-ready scratch pad, and an expandable work surface for expansive visions. Used separately or together, these aids can cut hours off your work time and save you considerable frustration.

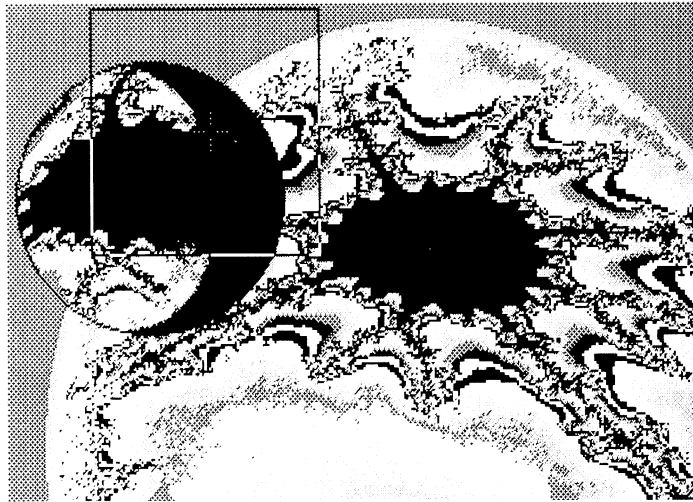
Magnify and Zoom

Deluxe Paint II's magnify and zoom features—it's magnifying glass—are indispensable for detailed work, especially in the higher resolutions. The Magnify feature allows you to enlarge any area under the crosshairs by a factor of two or more. The Zoom feature functions like the zoom lens on a camera, making it possible to move in on your subject with a high magnification (about 30× in the Amiga, 16× in the IIGS) or pull back to a low magnification (about 2×) to see more of the picture. Best of all, Magnify and Zoom can be used in conjunction with any other *Deluxe Paint II* feature, so that you can do any necessary work right in the magnified area without having to toggle back and forth between a normal and a magnified view.

Figures 7-1 and 7-2 show how Magnify operates. Put your own picture on the page and follow along.

The Magnify toolbox icon is the magnifying glass above UNDO. Select it and then move out onto the page. A Magnify selector box appears that can be placed anywhere over the image. You can size the Magnify selector box with the Zoom tool, which is next to the magnify tool. Click on the Amiga Zoom tool to increase the magnification (the box will get smaller), or right-click to decrease the magnification (the box will get bigger). Click on the up

Figure 7-1. Magnify 1



arrow of the IIGS Zoom tool to increase magnification; click on the down arrow to decrease magnification.

Another way to magnify is to place the crosshairs over the area to be worked on and hit the M key. The area will be magnified to the current zoom level without the intermediate step of positioning the Magnify selector box.

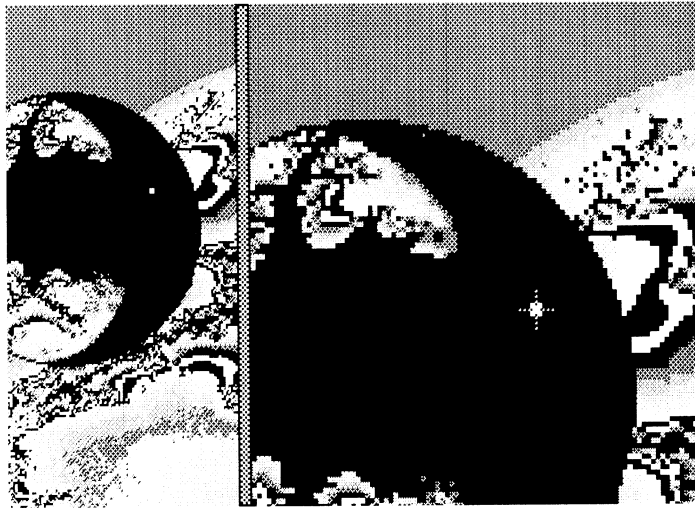
Once the box is positioned, clicking the mouse gives you a screen like the one in Figure 7-2. The magnified area is displayed on the right two-thirds of the page, separated by a band from the left hand-part of the screen, which shows a normal-sized view of the same area.

You can use the arrow keys to scroll around on the right side of the page, just as you would move a slide around under a microscope to see different parts of it. This lets you put every part of your picture under magnification without having to switch off the Magnify feature, select a new area, and turn Magnify back on. Note that at high magnifications you have unerring placement of any pixel, but you have to do a lot of tedious scrolling to work across a large area. You'll save time by using the lowest magnification that lets you get the job done.

Look at the unmagnified part of the screen to see the effect of the changes you're making. Any action you take in the magnified

area is also shown in the unmagnified area. And you can cross the checkered band at will to work in either area. It doesn't matter which side you work on—the effects are immediately shown in both. When you're finished, click on the Magnify tool again to exit the Magnify mode.

Figure 7-2. Magnify 2



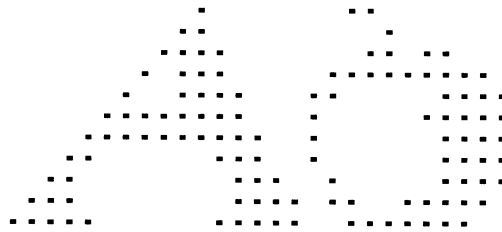
The Grid

Deluxe Paint II's grid tool is an invaluable aid for any task that requires precise spacing of lines or brushes, such as drafting, designing, business graphics, and patterning. You'll find it above the Magnify tool in the toolbox. Switching on the grid creates an invisible grid on the page. The grid affects most of the drawing tools—brushes can be placed only on the grid intersections, lines will snap to align with those intersections, and the shape tools will center or corner on them.

For example, the freehand dotted-line tool will deposit brush blots only on the grid intersections, leaving a polka-dot pattern like the one in Figure 7-3.

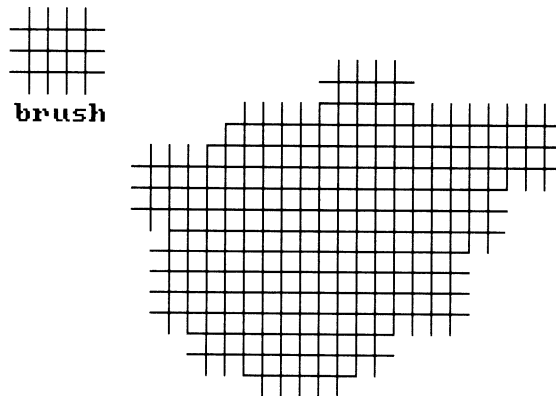
All the tools are constrained by the grid except for the freehand line tool and the airbrush.

Figure 7-3. Dotted-Line Tool on a Grid



Making the grid visible will help you to see how it works. The process is illustrated in Figure 7-4 and described below.

Figure 7-4. Visible Grid



- » Select the grid tool, and then the straight-line tool, a one-pixel brush, and a light color.
- » Draw four short parallel vertical lines. The grid makes drawing parallel lines easy—the lines snap to exact positions without trial and error on your part. Now draw three horizontal parallel lines intersecting the vertical lines.
- » Pick up as a brush the little grid you've drawn. The dotted-line tool will automatically turn on. Start painting with the grid brush; it will paint over only the invisible grid lines. Fill up the page and you'll be able to see all of the grid.

Leave the visible grid on the page and try some of the other drawing tools to see how they work. The endpoints and apex of a curve drawn with the curved-line tool will snap to the grid inter-

sections, as will the corners of rectangles and polygons. Circles and ellipses center on them, and so does any custom brush painted with the dotted-line tool.

Adjusting the Grid

Use the Gridding box to adjust grid spacing—that is, the distance between grid intersections. Figure 7-5 shows the Amiga Gridding box and Figure 7-6 shows the Apple IIGS Gridding box.

Figure 7-5. Amiga Gridding Box

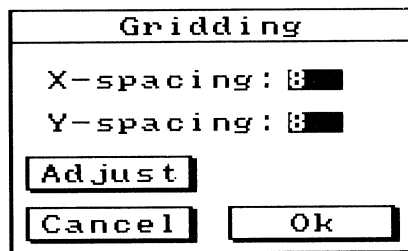
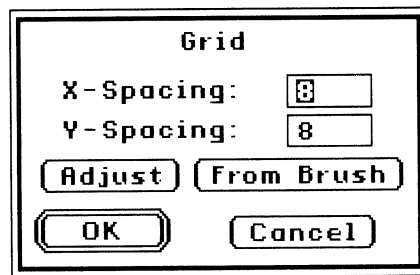


Figure 7-6. Apple IIGS Gridding Box



You can enter whatever values (in pixels) you like in the X- and Y-spacing gadgets. Large values make for a coarse grid, small values for a fine one. Or you can select *Adjust*, which calls up a ghost grid that can be moved onscreen and stretched with a sizing gadget. The ghost grid can be centered and sized to match an existing image, so that the grid will conform to your picture rather than the other way around. After you've set a new size with the ghost grid, click to confirm the revised grid settings.

Practical Design with the Grid

The grid is indispensable for doing technical drawings, including architectural and mechanical drafting. Two examples of practical design with the grid are illustrated in Figures 7-7 and 7-8.

This floor plan for an apartment is laid out on a grid of 8 pixels by 8 pixels (the default grid values). You can also set the grid to represent an exact scale—say, one grid square equaling a square foot or square meter. The architectural symbols (walls, doors, windows, and fixtures) were loaded one by one from a brush library

available from Electronic Arts. They're easy to position because they snap to the grid intersections. If the grid is too confining, it can be turned off temporarily and elements can be positioned by hand.

Creating plans, elevations, and other architectural drawings in this way has many advantages. Layouts are quick, accurate, and simple to revise. Creating and maintaining a brush library of often-used symbols relieves you of the need to redraw objects repeatedly. In most cases, you can develop a new design in a fraction of the time it would have taken to draw one with pen and paper. Once you've settled on the basic design, you can draft the final blueprint by hand or with dedicated computer-aided architectural design software. Your *Deluxe Paint II* design drawing can also be used as the basis for a full-color rendering.

Use the grid for mechanical design drafting as well. The "manual integrated-circuit cutter" in Figure 7-8 was drawn on the same grid as the floor plan in Figure 7-7.

This type of mechanical drawing is called an orthographic projection: It describes the drawn object fully by showing the top, front, and right-side view. (More complex objects may require more views.) Notice that the grid makes it simple to align the three views exactly. Hidden areas and center lines are indicated by dotted lines.

Beyond architectural and mechanical drafting, the grid tool is useful for drawing maps; graphs; tables; bar and flow charts; block; project, and assembly diagrams; and a wide variety of other practical graphics. The use of the grid to create an unlimited number of abstract patterns is covered in Chapter 9.

Coordinates

Another tool you'll find useful for making exact drawings is the coordinates feature. This is an option in the Amiga's Prefs menu and the Apple IIGS's Edit menu. When Coords is selected, *Deluxe Paint II* treats the entire page as a Cartesian plane. A pair of numbers—an x -axis (horizontal) value and a y -axis (vertical) value—is assigned to every pixel location. The x -axis coordinates read from the left-hand margin of the page to the right, starting from 0, while the y -axis coordinates read from top to bottom, and also begin with 0. These numbers are displayed on the Amiga's menu bar and the IIGS's Info bar, and give a running fix on the location of the cross-hairs as you move them on the page. For example, a one-pixel brush at the exact middle of a 320×200 page would display the coordinates $x = 159, y = 99$.

Figure 7-7. Floor Plan

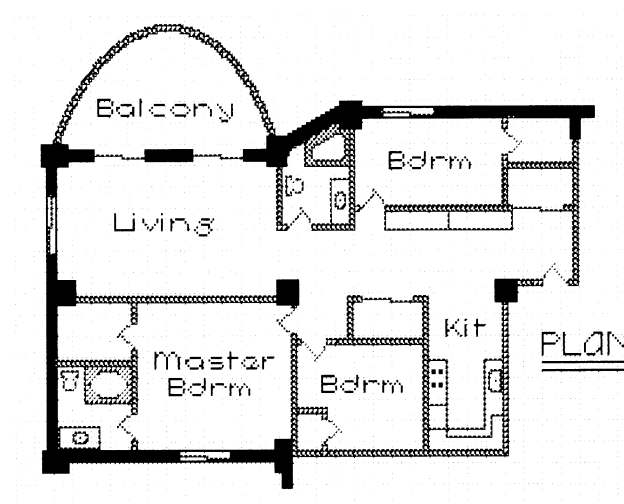
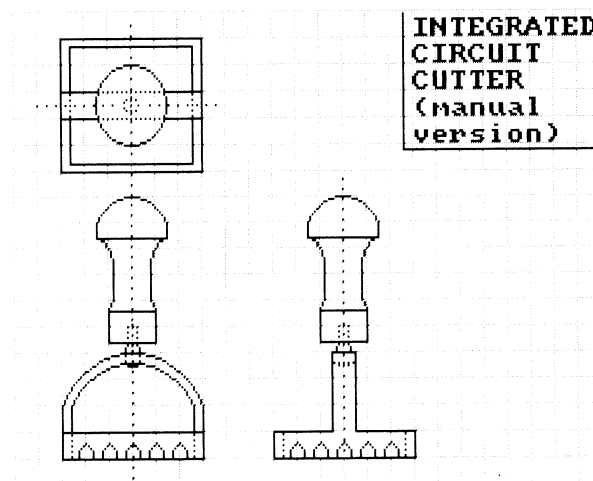


Figure 7-8. An Orthographic Projection



The beauty of coordinates is that they give a precise and absolute way of locating objects on the page. When you center your brush on $x = 66$, $y = 112$, you know it will always be in the same spot on the page, regardless of how the background may have changed. This is an important aid when you're doing a series of drawings in which some elements change position while others

must remain stationary—for example, when you're using *Deluxe Paint II* to create frame-by-frame video animation. (Animation techniques are discussed in Appendix A.)

Stencils

Remember those letter and animal stencils you used as a child? They let you color in shapes without worrying about coloring over their outlines. *Deluxe Paint II*'s stencil feature does the same thing, but with far more sophistication. Among the many things you can do with stencils:

- » Paint around and behind an image without disturbing it.
- » Replace one background with another without disturbing the foreground.
- » Quickly replace one color with another in the entire picture or just one area, without changing the palette settings.
- » Make *friskets* (special stencils) for containing the spray of the airbrush.

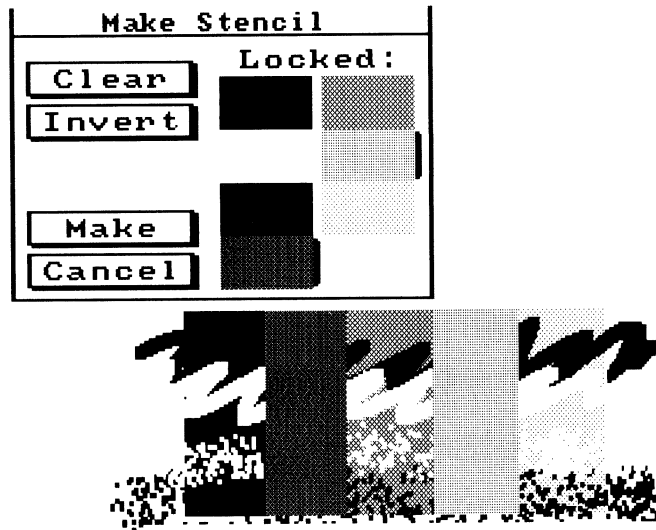
Your *Deluxe Paint II* manual contains a thorough discussion of the stencil feature. It's definitely worth reading. Work through the tutorial as well. In this section, we'll touch on a few of the ways to use stencils.

Figure 7-9 shows the basic operation of the stencil. You can call up the Stencil box (the Amiga version is at the upper left) by selecting Make Stencil from the Amiga's Effects menu or the Apple IIGS's Picture menu. Locking a color displayed in the Stencil box (by clicking on it) prevents you from painting over any area in that color. As you can see in the figure, the two locked vertical strips of color were left untouched as various brushes were moved across the page.

Alternatively, you can create stencils keyed to an object's location rather than to its color. Here's how:

- » Paint in the background, and then lock it with the Fix Background option in the Amiga's Effects menu or the Apple IIGS's Picture menu. Once the background is fixed, you can paint over it, but it will remain intact and unaffected underneath.
- » Draw the object you want to make into a stencil and then lock the foreground with the Lock Foreground option. The object is now protected from overpainting no matter what colors are in it. The same colors outside the boundary of the object can be painted over, however.

Figure 7-9. Using Stencil



» You can lock the foreground as many times as you like or turn off the lock to make alterations in the foreground. If you paint over the locked background, and then unlock and relock it, the painted-over areas will be incorporated into the new locked background. You should keep in mind that locking the background and foreground uses memory; you may not have enough left for other *Deluxe Paint II* features like the spare page (see below).

A simple use for the stencil feature is demonstrated in Figures 7-10 and 7-11. In this application, an architectural firm is developing two proposals for the site of X Corp's new corporate headquarters. As often happens, X Corp is not sure what corporate image the new building should project—stern and monolithic, as in Figure 7-10, or sprawling and relaxed, as in Figure 7-11. To help X Corp make up its mind, the architects have prepared a drawing of the site. By careful stenciling of colors, the buildings (drawn separately and stored as brushes) can be inserted in among the trees. The X Corp planning committee can thus get an accurate idea of how each proposed building will look, while the architects save the trouble of making two separate complete drawings.

Figure 7-10. X Corp Plan A

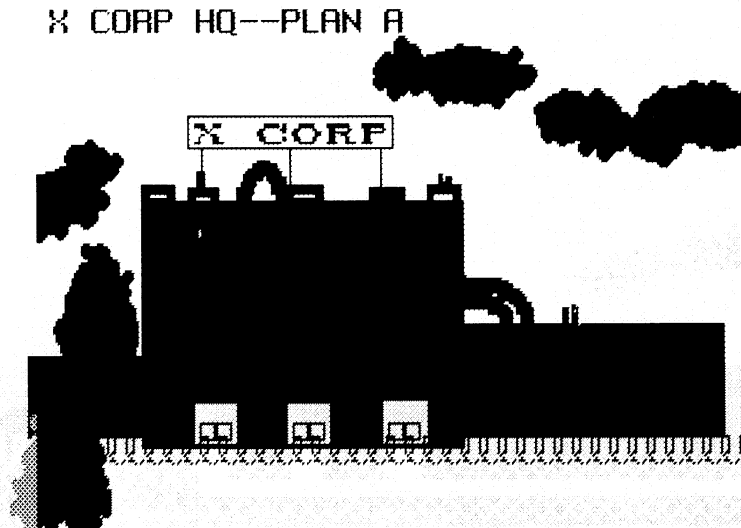


Figure 7-11. X Corp Plan B

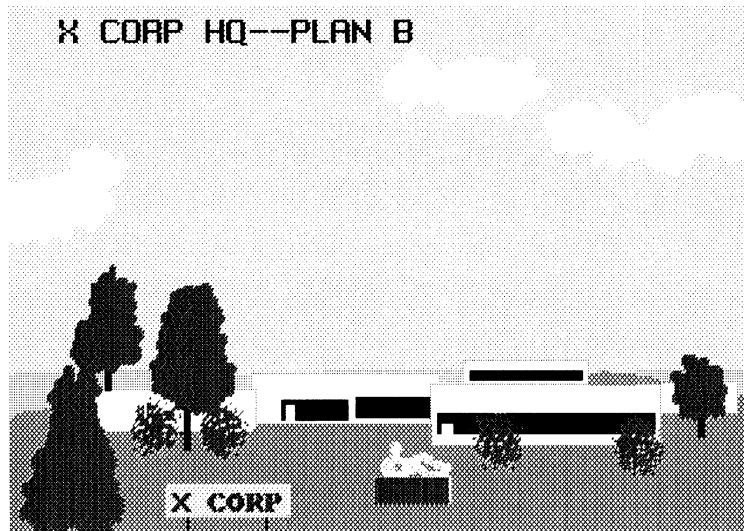
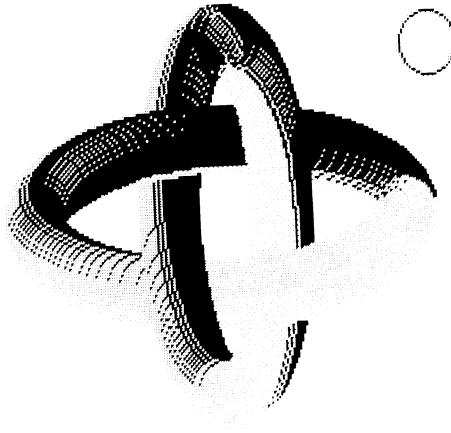


Figure 7-12 illustrates a different use of stencil. This curious figure is made of two impossibly interlinked toruses, each created with the ellipse tool and circular brush at upper right in the figure. With some clever stenciling, the vertical torus can be drawn over the horizontal torus in one pass. Can you figure out how? Hint: two identical sets of colors are required.

Figure 7-12. Toruses



Friskets

The spray of *Deluxe Paint II*'s airbrush is somewhat unpredictable, and it's hard to keep the spray within an outline. Artists using the mechanical variety of airbrush face the same problem, and so apply friskets (cut-out paper or mylar stencils) to mask off areas that must be kept free of paint. In fact, the cutting, fitting, and care of friskets takes up as much or more time of an airbrush artist's day as the actual application of paint. In *Deluxe Paint II*, you can use the stencil feature as a frisket to confine the airbrush spray. Simply lock all the colors but the one you want to paint on and spray away.

That approach is no good when you can't lock off all the colors in the area you want to protect because the area includes the same color as the one you want to paint over. You can try locking the foreground, but if you haven't locked the background recently you probably won't be able to lock the exact foreground area you want to protect.

One method to try is the following.

- » Make a brush of the area you want to protect.
- » Stamp down the brush in an unused part of the page (or on the

spare page, see below). Trim away any excess material to leave just the part you want to protect.

- » Pick it up as a brush and lock the background. Stamp down the brush in its original spot and lock the foreground. You can now airbrush and paint around the area without painting over it.

The Spare Page

Deluxe Paint II has a built-in scratch pad, the spare page. You can doodle, experiment, and store parts of drawings on the spare page, then pick them up, switch to the main picture, and add them there. The spare and main pages are in fact identical in every way (except for what you draw on them). All the tools and features work in each, and they share the same palette. The only thing you can't do is have two oversized pages at once.

Access to the spare page is through the Picture menu. You can also toggle instantly between the two pages by hitting the J key. There are several spare-page options, including deleting the page and merging it with the main page. Later we'll try a project that requires the use of the spare page.

Merging Foreground and Background

Often you'll want to work on foreground and background in isolation from each other. This has several advantages. Working on a foreground object by itself allows you to concentrate on it without being distracted by busy background detail. And painting the background on its own enables you to paint and repaint without worry about damage to the foreground object and without the need to make and remake stencils.

One disadvantage to working this way is that when the separately created foreground and background are merged, they just may not work together. You can avoid this problem by merging the foreground and background temporarily at several stages in the development of the picture to make sure that everything works as it should. It saves work and trouble to make compositional and other major changes at an early stage rather than doing them later, although of course you can make any change at any time in a *Deluxe Paint II* picture.

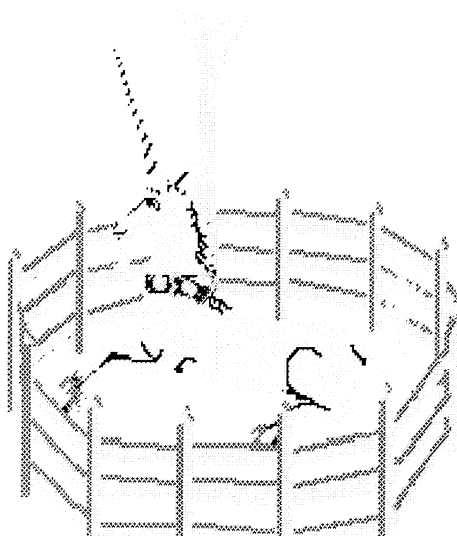
There are several ways to merge foreground and background. One way is simply to load the foreground object as a custom brush and position it on the background. Another way is to fix the background and paint the foreground over it, but that doesn't give you

the advantage of working on each in isolation. The third method, available in the Amiga version of *Deluxe Paint II*, is to paint the background on the main page and the foreground on the spare page (or vice versa) and merge them together using the Merge in Front and Merge in Back options.

The “Captive Unicorn” (Figures 7-13, 7-14, and 7-15) makes use of the spare-page Merge options. (If you’re using a IIGS and would like to duplicate this picture, use one of the other merging techniques, such as picking up the foreground as a brush and superimposing it on the background.) To recreate the unicorn, take the following steps.

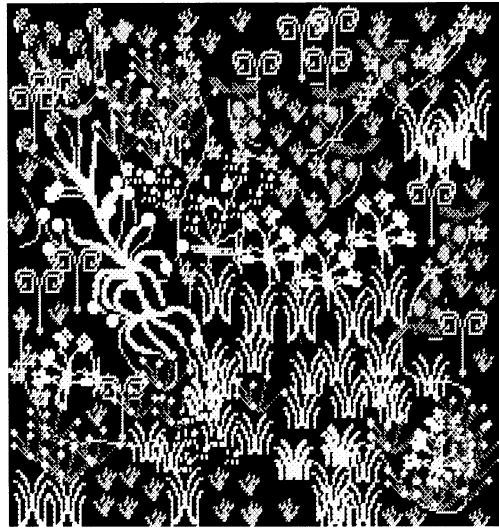
- » Draw a rectangle 240 pixels wide and 200 pixels high to define the boundary of the picture. Pick up that rectangle as a brush, create a spare page, and stamp down the rectangle in the same place on the spare screen. Toggle back and forth between screens to make sure the two rectangles are in perfect alignment.
 - » Begin work on the foreground image (in this case, the unicorn, fence, and tree, as shown in Figure 7-13) on the spare page. You’ll need white for the background color, orange and orange-brown for the fence, beige and brown for the tree, a range of grays and black for the unicorn, and dark green and gold for his collar.
- Leave the area around the unicorn, the tree, and the fence in the background color, white.

Figure 7-13. Unicorn Foreground



- » At the same time, you can begin work on the background (Figure 7-14) on the main page. The main background color is a deep forest green. The floral pattern is created with several small brushes of different plant shapes, repeated here and there over the picture. You'll need a light and dark green, as well as bright blue, red, and pink for the blossoms.

Figure 7-14. Unicorn Background



- » As you work on foreground and background, make sure to save each to a separate file. Toggle back and forth between the two pages as needed.
- » When you're reasonably pleased with both pages, try merging them by selecting the Merge in Front menu option. The spare page (the unicorn) will automatically be superimposed on the main page (the floral background). Any areas painted on the spare page in the background color will be transparent.
- » If you're not satisfied with the result, undo the merge and fix the problem. Remerge as necessary until you're satisfied. Then you can add the final details like the foliage in front of the unicorn and the chain. The completed version is shown in Figure 7-15.

Figure 7-15. Unicorn Merged

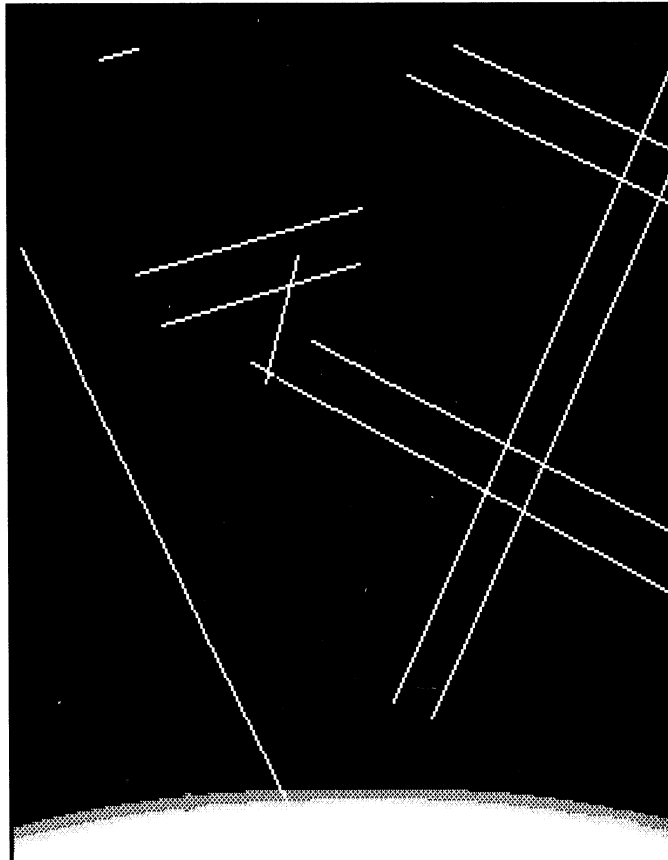


Using Oversize Pages

As you'll recall from Chapter 2, *Deluxe Paint II* allows you to work with many different page sizes. It's wonderful not to be constrained by the size of your screen, but working with oversize pages also presents some unusual problems. The most serious problem is that you can't see or work on the entire oversize page at one time, but must scroll within it using the cursor keys. This makes it difficult to compose pictures. Careful planning is necessary to insure that all the parts of an oversize picture fit together at the end. Techniques for working with oversize pages are incorporated in the next project, an artist's conception of NASA's planned space station and national space plane (Figures 7-16 through 7-20).

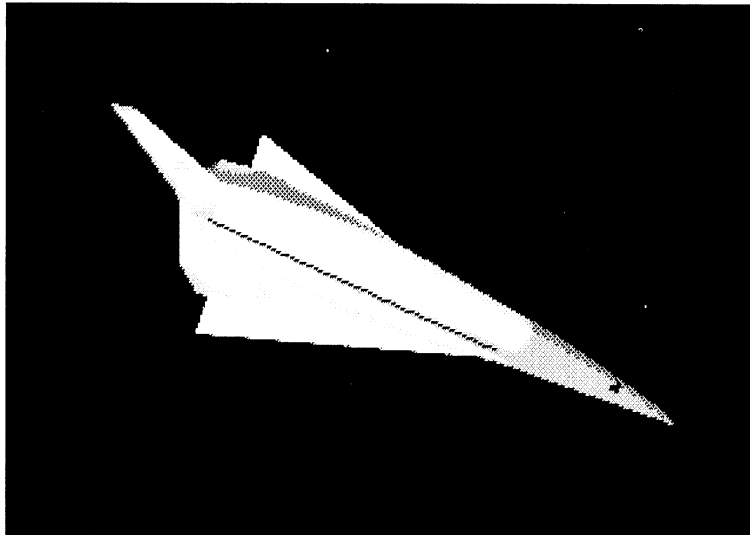
Figure 7-16 is the planning picture. It defines the page size, 320 pixels wide by 340 pixels high. The actual picture is only 280 pixels wide. A box is drawn to enclose the picture area. To draw the box, use the straight-line tool and begin at the upper part of the picture. Draw the top and sides of the box; then scroll down to the lower part of the picture and finish the box. The diagonal lines show where the various elements of the finished picture will be. It's best to make compositional decisions now, because they will be harder to change later. At the bottom is Earth.

Figure 7-16. Space Station—Planning and Composition



The space plane (Figure 7-17) is drawn on the spare page. Smoothing is used on some of the plane's contours to give it a sleek, streamlined look. It will be rotated 90 degrees for the main picture. The plane is saved as a brush to clear the spare page for the next task.

Figure 7-17. Space Station—Spaceplane



Parts of the space station are drawn on the newly cleared spare page (Figure 7-18). These will be picked up as brushes and used to assemble the complete space station. In the final picture, some of the parts were modified to suit the look of the rest of the picture.

Figure 7-18. Space Station—Parts

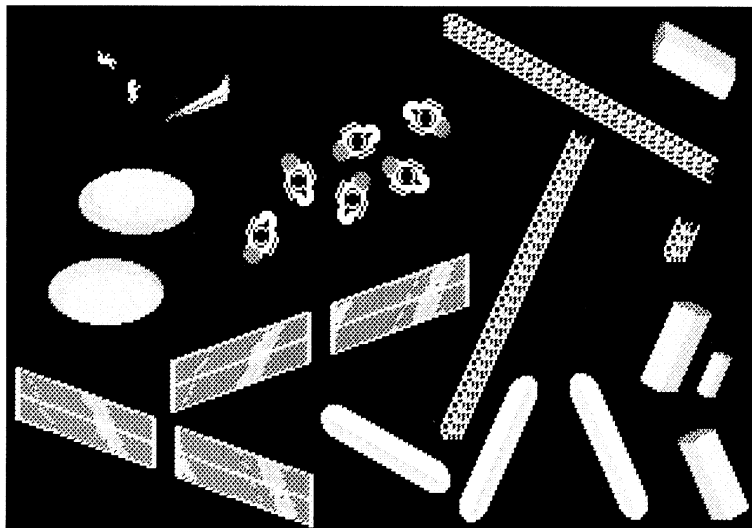


Figure 7-19. Space Station—Show Page

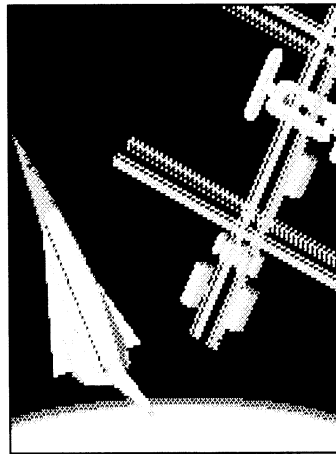
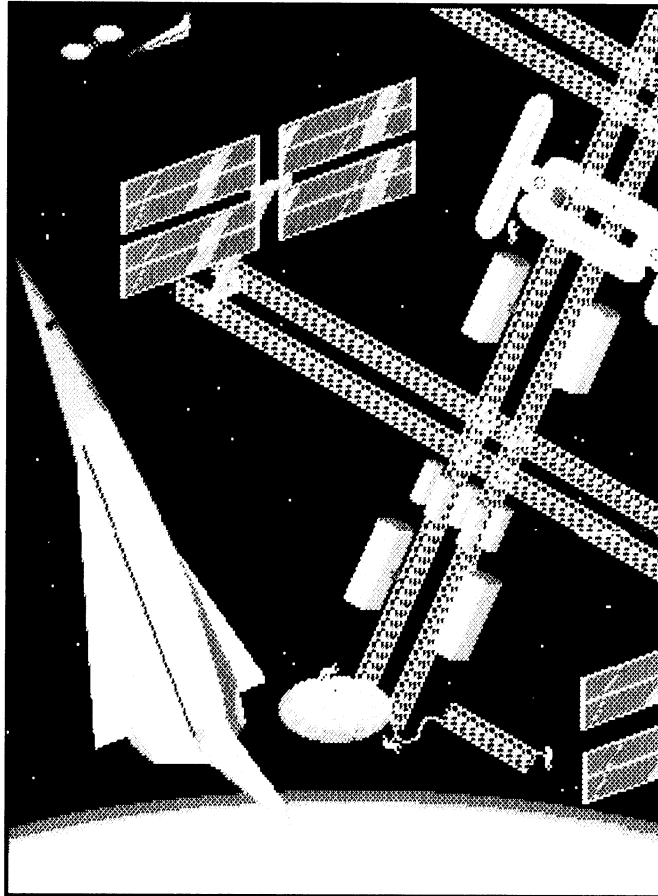


Figure 7-19 demonstrates the use of *Deluxe Paint II*'s Show Page feature. Activate Show Page by selecting it from the Picture menu. The entire oversize page (shown here at a fairly late stage of development) is condensed to fit on a standard page (by dropping at least every other pixel) so you can see the whole composition. Remember that you can't work on the picture in Show Page mode or display it simultaneously with the oversize page.

The completed picture is shown in Figure 7-20. The space plane, which in its vertical version is taller than the maximum active workspace (320 by 200 pixels), has to be stamped down in two operations. Place the lower half of the spaceplane brush in its proper position (the upper half of the plane will be off the active workspace) and then stamp it down. Scroll to the upper part of the page, align the upper part of the spaceplane with the part already painted, and stamp it down. Add a sprinkling of stars and the picture is complete.

Figure 7-20. Space Station—Completed





CHAPTER 8
Text




A

All kinds of graphic communication, from business graphs to comic strips, require text to make them intelligible. This chapter covers *Deluxe Paint II's* text tool, a basic word processor you can use to place titles, labels, and blocks of text in any picture. You'll also learn how to create your own typefaces and incorporate them into graphics for business and personal use.

The Text Tool

The text tool is located in the toolbox, next to the custom-brush tool. It's simple to use. Click on it and move to the page; the pointer will turn into a blinking text box. Click the mouse button to fix the box in position and then type the word *text* on the keyboard. The text box moves to the right, leaving behind letters in the foreground color, as you can see in Figure 8-1.

Figure 8-1. Text Tool

Text  The text tool is what is known in word processing jargon as a *line editor*. With it, you can:

- » Type any text in your keyboard's basic character set.
- » Use all of your computer's standard fonts.
- » Type text in the foreground color.
- » Edit the line you're currently typing by backspacing (or deleting, if you're using an Apple IIGS) from the current position of the text box.
- » Start a new line of left-justified text by hitting the RETURN key.
- » Set a left-hand margin anywhere you position the text box.

The text function has some limitations, however, and will not:

- » Let you set a right-hand margin.
- » Prevent you from typing off the side of the page.
- » Do word-wrap—that is, automatically start a new line as you approach a right-hand margin.

- » Enable you to edit text on lines other than the one you're currently typing.
- » Let you use most of the keyboard command equivalents while the text tool is active.

Try typing a sample paragraph on the *Deluxe Paint II* page to get a feel for how the text tool works. You'll quickly discover that it's not designed for heavy-duty text entry. But it *is* quite capable of handling most picture-related tasks.

Fonts

A *font*, also called a *typeface*, is a complete set of letters and other characters in one *type style* and *size*. Ten-point Times Roman, for example, is a font often used in newspapers and books. There are many fonts, ranging from the utilitarian to the exclusively decorative. Both the Amiga and the Apple IIGS provide a selection of built-in fonts. These are illustrated in Figures 8-2 and 8-3.

Figure 8-2. Amiga Fonts

Topaz 8	Opal 9
Topaz 9	Opal 12
Topaz 11	emerald 17
Ruby 8	emerald 20
Ruby 12	Garnet 9
Ruby 15	Garnet 16
Diamond 12	Sapphire 14
Diamond 20	Sapphire 20

Fonts come in various sizes, measured by *points* (there are 72 points in an inch). The numbers after each font name in the figures above indicate the font's size in points. As you can see, a smaller point number means a smaller font, and a larger number means a larger font. The IIGS offers fonts in 8-, 10-, 12-, 14-, and 16-point sizes (not all fonts are available in all those sizes, however). The Amiga has fewer sizes for each font, but note that the larger fonts are not blown-up copies of the smaller versions; the larger letters are actually redrawn with more detail.

Figure 8-3. Apple IIGS Fonts

Courier 8
 Geneva 10
 Helvetica 12
Shastan 12
 Times 14
Venice 16

Figure 8-4. Styles

Plain
Bold
Italic
Underline
All Styles
Outline

In addition to choosing a font size, you can specify whether letters will be plain, bold, italic, underlined, or any combination of these, as shown in Figure 8-4. These options are available from the Font menu.

Italics are not a menu option in the IIGS version; you have to create them. This can be easily done by picking up the text as a brush and using the Shear option to slant the letter to the desired degree.

Outlined text is not a menu option in the Amiga version; you have to create it using the custom brush tool. Here's how.

- » Type in the text in any color, using the text tool.
- » Pick up the text as a brush.
- » Turn on the hollow-rectangle tool. Use the brush to draw a box by moving it two pixels down and two to the right (you can be sure of the number of pixels moved if you choose Coords from the Prefs menu). The result will look like a very thick version of the brush.
- » Turn on the freehand tool. Switch your custom brush to a different color using the Color option in the Mode menu. Stamp down the brush in the center of the box you drew.
- » If you want a shadow-style effect instead of an outline, just stamp down the brush in the box a bit off-center.
- » To make multiple outlines, simply pick up the outlined text as a new brush and repeat the process.

Text size can be changed by picking up the text as a brush and using the brush-sizing menu options. You can always make a built-in font larger this way. Trying to make a font smaller, however,

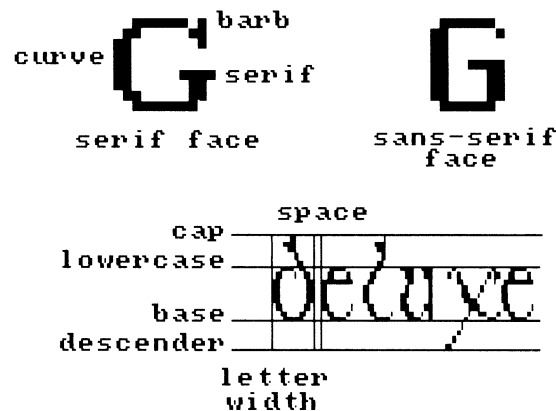
often doesn't work. When shrunk, the letters lose too many pixels and become unreadable. At best, you'll have to redraw many of the individual letters by hand.

Creating Custom Fonts

Often the built-in fonts won't be the style or size that you need. There are literally thousands of other font styles to choose from—look at a selection of glossy magazines to see scores of them—and, with *Deluxe Paint II*, you can copy these or create your own fonts. Although you cannot use custom fonts in conjunction with the text tool, which only works with the built-in fonts, you can create and save them letter by letter in a brush library or all together in a separate picture file. Then, as you need them, you can load the letters as brushes and position them on your picture.

Most typefaces fall into two general categories, *serif* and *sans serif*. Serif letters have short bases, caps, and tails on the letters to make them easier to read (though harder to create); sans-serif letters look clean and modern, but are harder to read. Many exotic type styles, such as Babyteeth and Rambo, don't really fall into either traditional category. Figure 8-5 shows the basic elements of a typeface.

Figure 8-5. Typeface Elements

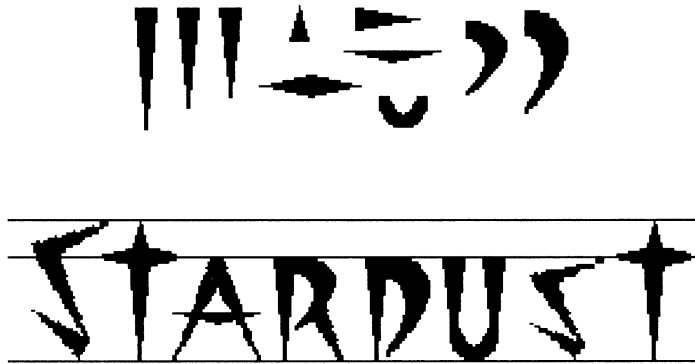


To draw the letters of a font alphabet, you must first establish their dimensions and proportions with scaffolding lines. First set a baseline. Then decide how high the capitals and lowercase letters with ascenders, like *d* and *h*, will be. Next, set the height of the lowercase letters without ascenders; this can also be the height of

the lower parts of capitals and of letters with ascenders, like the lobe in the letter *b*. Determine a lower limit for the letters with descenders, like *g* and *y*. Finally, set the width of the letters, the space between them, and, if there will be more than one line of text, the space between lines.

The curves, straight sections, and other parts of any letters you create can be saved as separate brushes, then combined to make other letters. The word *Stardust* in Figure 8-6 is made with only ten different brushes, shown in the upper half of the figure. Nearly all the other letters in the font can be made with the same brushes. The brushes can be sized and rotated as necessary with the Brush menu options.

Figure 8-6. Stardust



Custom fonts can be as plain or as decorative as you like. Figures 8-7 and 8-8 show two variations on a decorative theme.

To create Figure 8-7's *DELUXE*, which looks like it was roughly cut out of shiny metal, first type out the word in one of the sans-serif, built-in fonts. Pick it up as a brush and enlarge it to four times normal size. Add the rough texture to each letter by hand. Then pick up the word as a brush again, shear it sharply to the left, and give it thickness by dragging it with the straight-line tool.

Figure 8-7. Metal *DELUXE*



The word *PAINT* in Figure 8-8 also starts out with the word typed in a sans-serif, built-in font. Pick it up as a brush, enlarge it to four times normal size, and then fill it with a gradient. In the color version of this illustration, the gradient runs from deep red at the top through orange and yellow to deep salmon at bottom. Pick up the word as a brush again, double its height, and give it thickness by dragging it in a straight line in Color mode with black as the foreground color. Switch back to Matte mode and stamp down the gradient word on top of the black version. Finally, paint some colorful polygons behind the word using the stencil feature to protect it.

Figure 8-8. Gradient *PAINT*



Infinite variations on these and other elaborate fonts are possible. Experiment with resizing and recoloring built-in and custom fonts, flipping, rotating, and bending them, adding thickness, drop shadows, and multiple outlines. One factor to keep in mind is that as the font becomes more elaborate, it's likely to become less readable and less suitable for displaying more than one or two words at a time. Keep custom fonts simple when clear and direct communication is what's called for, and use fancy fonts when you want to catch the eye and stimulate the imagination of your audience.

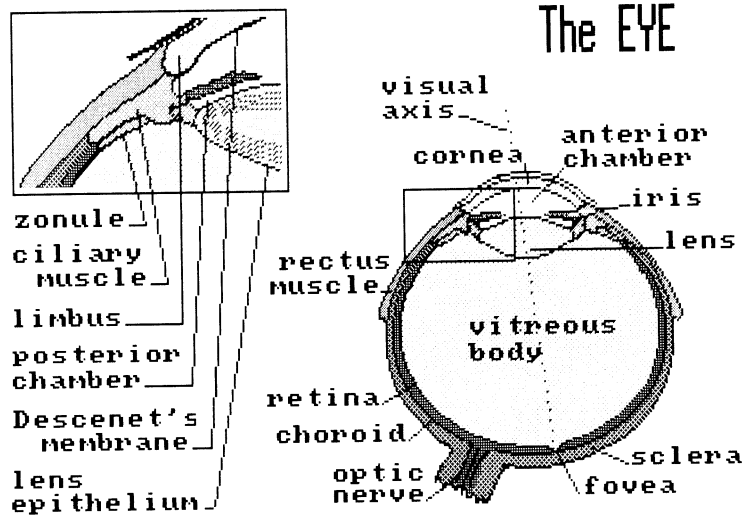
Mixing Art and Text

How can you use text to complement your pictures? Here are several examples to consider.

Diagrams

Figure 8-9 shows two typical arrangements for labeling a diagram. The cutaway view of the complete eye is surrounded by labels identifying its main parts. The labels are placed in or near the parts they describe, with connecting lines to aid in quick location. The magnified inset, too small to contain text itself, has its labels stacked below.

Figure 8-9. The Eye



Invitations

Informal invitations call for a handmade look and some imaginative graphics. The main lettering in this invitation to a night of classic samurai video is a custom font meant to look like it was drawn with a brush. The text reads vertically in imitation of Japanese writing.

Figure 8-10. Invitation

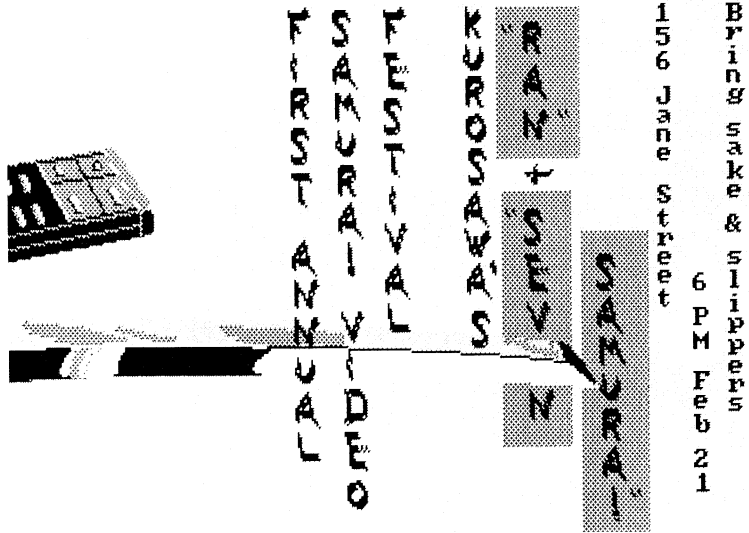
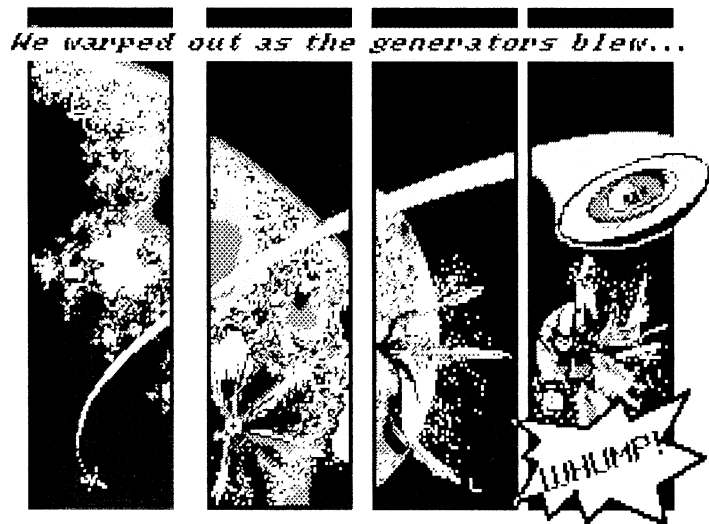


Figure 8-11. Comic Strip Panel



Comic Strips

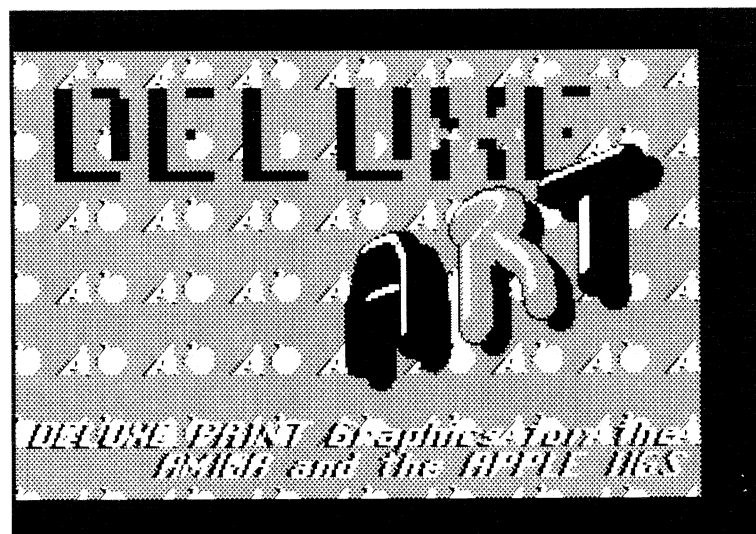
Comics strips have their own conventions for using text. Dialogue appears in *balloons* or in blocks above or below the panel. Narrative text, which is often in italics, can run in narrow boxes overlapping several panels. In addition, emphasis words, like the *whump* in Figure 8-11, add pictorial audio, and provide an opportunity to use tilted text, drop shadows, and the like. An explosion graphic behind these emphasis words gives them even greater impact.

Book, Magazine, and Newsletter Covers

Designs for book, magazine, and newsletter covers, mastheads, and posters can be mocked up quickly with *Deluxe Paint II*. This book cover design (Figure 8-12) contains an enlarged built-in font—letters made with a simple custom brush and the drawing tools—and a standard-size, built-in font in italics. All the text has drop shadows.

In a design of this kind, the differently sized and shaped text elements can be positioned to create an overall balance in the composition. You could equally well create an engaging unbalanced composition by moving the elements all to one side. It's worth rearranging a composition several times (by picking up the elements as custom brushes) to check out all the possibilities. You may find more than one arrangement that you like.

Figure 8-12. Book Cover



Business Graphics

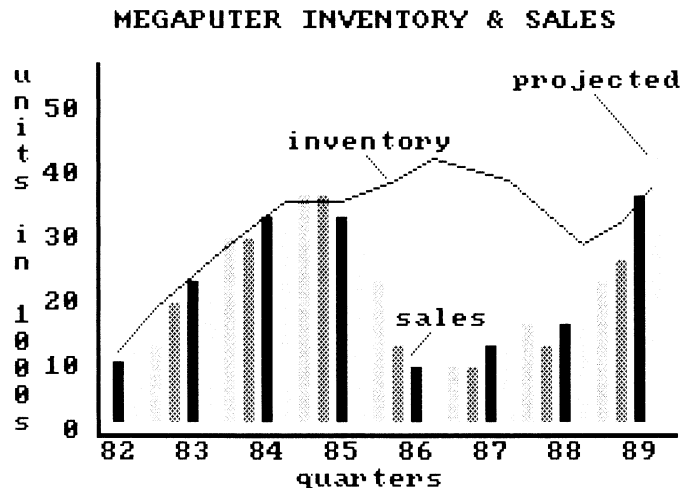
The personal computer has brought with it a revolution in business communication, especially in the use of business graphics. It's now accepted wisdom in the business world that graphics are the most efficient way to present all kinds of data. In fact, today it's hard to imagine a manager preparing a report without including the requisite bar, pie, and scatter charts, all generated by computer.

Deluxe Paint II can help you create charts and graphs with pizzazz. But that's not all it can do. The boom in business graphics is part of a larger movement toward desktop publishing, the production of finished text-and-graphics documents using a personal computer. *Deluxe Paint II's* range of graphic tools enables you to create sophisticated designs for your organization's business stationery, newsletter, catalog, and advertisements.

Charts and Maps

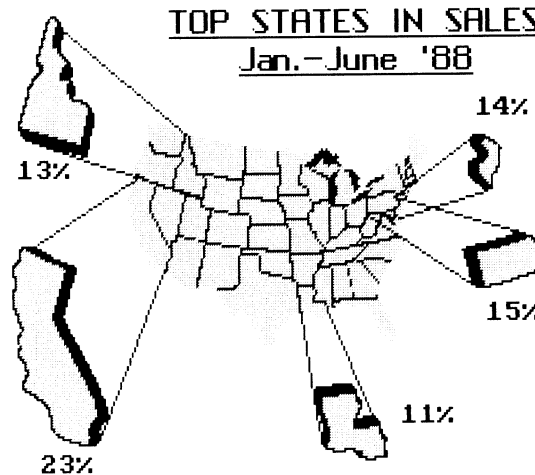
Deluxe Paint II's many graphic tools make drawing bar (and other) charts easy. Figure 8-13 shows a typical bar chart displaying the up-and-down-and-up fortunes of a computer manufacturer. When making your own chart, turn on the grid to help you set exact spacing for numbers, bars, and lines, and use the spare page to store labels and titles until you need them.

Figure 8-13. Bar Chart



Custom maps, like the sales map in Figure 8-14, are easy to make with clip art available from Electronic Arts. This map clearly emphasizes which states were tops in sales volume for the year.

Figure 8-14. Custom Map

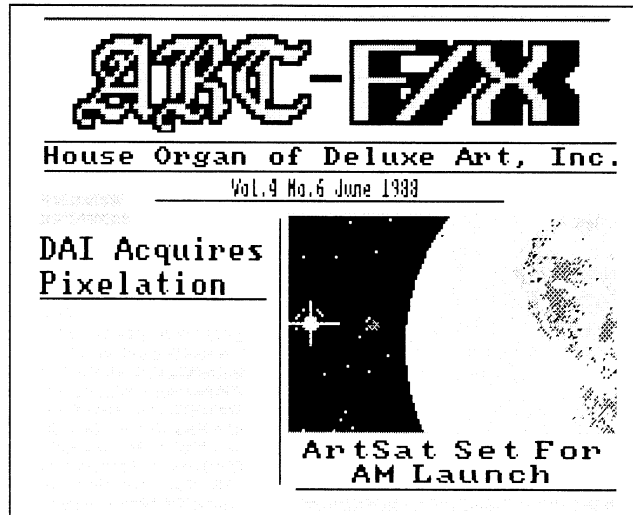


Charts, graphs, and maps can make the complex relationships among bits of data much easier to understand—that is, if the chart is easy to understand. Resist the temptation to adorn your graphics with lots of decorations, vibrating patterns, extraneous grid lines, and other “chartjunk,” especially in the area in which data is displayed. Subtle colors, a subdued background pattern, and clean layout are enough to give your graphic class and presence. You can even animate your graphic with color cycling, although this too should be used with restraint.

Newsletters

Deluxe Paint II can be used to create graphics and design elements for your organization’s newsletter or reports. An example is shown in Figure 8-15. All desktop publishing programs for the Amiga enable you to use *Deluxe Paint II* graphics in your documents; the same ability should soon be available for the Apple IIGS.

Figure 8-15. Newsletter



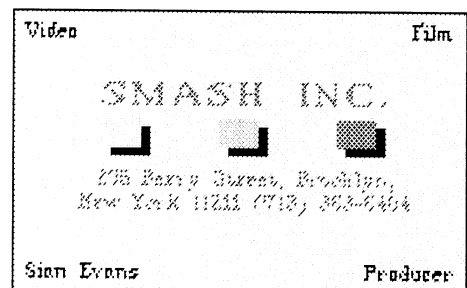
Business Stationery

Design your letterhead and business cards with *Deluxe Paint II*. As your business changes, you can easily change the design. A logo like the three floating boxes in Figures 8-16 and 8-17 helps to make your stationery memorable. Once you've obtained a high-quality printout of your design, you can take it to a print shop for offset reproduction. Or, if you want, you can take the design to a professional graphic artist—he or she can instantly see what you want in the finished product.

Figure 8-16. Letterhead



Figure 8-17. Business Card

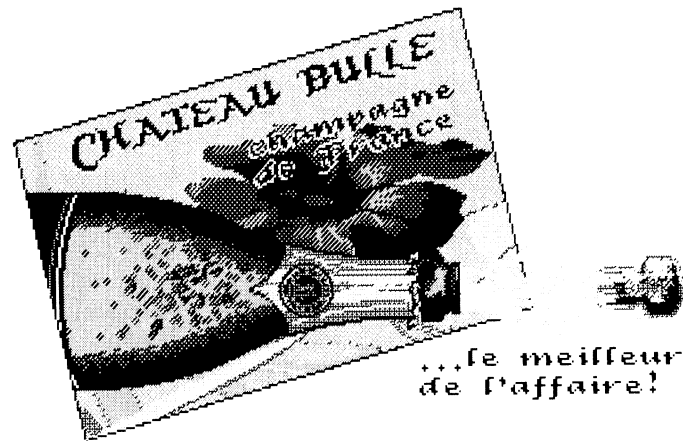


Advertisements

Use *Deluxe Paint II* to lay out and test advertising designs for yourself or your clients. Because design changes are so easy to make, you can alter the concept as often as necessary to get it right. And you'll save money by settling on the design *before* going to expensive processes like photography for the final product. (Photographic imagery can be digitized and incorporated into your *Deluxe Paint II* designs—see Appendix A.)

In Figure 8-18, an ad comp for imported champagne, a few text tricks are used. The text, in one of the built-in Amiga fonts, was rotated to match the tilted box, then cleaned up with small brushes and erasers to remove the raggedness that rotating causes. The text on the label was rotated 90 degrees and then bent horizontally to match the curvature of the bottle. The text at the bottom was placed to emphasize the frothily popping cork—one image that no champagne ad can do without.

Figure 8-18. Champagne Ad



Catalog Copy

Mail-order catalogs are another area in which *Deluxe Paint II* can be very useful. Once you build up a *Deluxe Paint II* library of product drawings and text descriptions, you can lay out a new catalog as often as you like. With the trend in mail-order catalogs toward intriguing copy and artful renderings of products, you may want to include product descriptions like the one in Figure 8-19.

Figure 8-19. Catalog Copy



Television Graphics

The Amiga and the Apple IIGS both output composite video signals which can be recorded by a VCR or fed directly into a cable or broadcasting system. So any graphic you create with *Deluxe Paint II* can be used on television. Small cable companies and TV stations can use *Deluxe Paint II* to generate low-cost, high-quality video graphics (see Figure 8-20).

There are a few rules to follow when creating graphics for video. The most important is: **Keep it simple.**

Use large letters and short words. Most people's television sets are not nearly as sharp and clear as the RGB monitor you're probably using. Text has to be large to be readable.

Also, use graphic symbols that anyone can grasp—a world map for an international news bulletin, for example. And avoid intense reds and oranges; these bleed and blur on most color TVs. Greens, blues, yellows, and grays show up best.

Figure 8-20. World News Update





CHAPTER 9
Patterning



P

atterning, the creation of regularly repeating designs, has always been an essential aspect of art making. Patterns have prominent functions in religious forms of art, from Islamic architecture to medieval manuscript illuminations to modern Amish quilts. Other patterns have more practical uses—for example, on Formica tabletops, where they're intended to add visual interest to an otherwise featureless area and to hide minor spills and stains. And some patterns, such as those denoting various kinds of terrain in a topographical map, are designed to carry significant information.

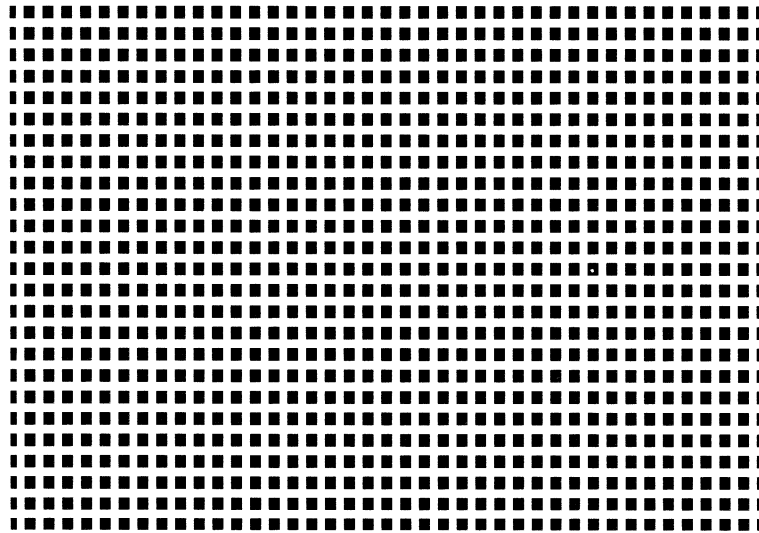
With traditional media, the creation of detailed patterns is usually tedious. Painting or drawing the same little shape or squiggle hundreds of times in exactly the same way is, understandably, a less-than-appealing task for many artists, who therefore don't take advantage of the rich decorative possibilities that patterns provide. Doing the same thing over and over again is just what computers are best at, however, and patterning is one area in which computer graphics has traditional artistic methods beaten. With *Deluxe Paint II's* wide assortment of patterning tools, you can explore the world of patterns and the techniques of pattern making while letting the computer do all the hard work.

Patterning with the Grid

The grid tool provides an easy way to make patterns on a rectangular matrix. One of the simplest is shown in Figure 9-1. This block pattern is created with the dotted freehand line tool, a square black built-in brush, and the grid. To make it yourself, turn on the grid (it will automatically set to an 8 × 8-pixel grid, the default size) and start drawing over the page with the dotted-line tool and the square brush. Because the brush paints only on the grid intersections, you can make a perfectly regular pattern simply by painting over the entire page. This takes a little effort, but absolutely no skill.

Note the “mirage” squares that seem to be visible on the white paths between the black squares. Optical illusions like these are easily produced with grid-based patterns—imagine how long it took the op-art painters of the 1960s to achieve the same effect.

Figure 9-1. Block Pattern



You can multiply any other shape across the page in the same way. Try drawing some simple custom brushes and applying them over the grid, using different settings and flipping the brushes in various directions. Even a simple shape can yield many different patterns. Take a look at Figure 9-2. The angled line at top center is the basis for all the other patterns. Draw the same angle and try to recreate the patterns.

The white, shadowed patterns are made by painting the angle in the background color (white) over the same patterns in black; the angle is offset by one pixel to leave the black shadowing.

Moire patterns can be made by superimposing one simple pattern over itself or over another pattern. Figure 9-3 demonstrates this with four different “mother” patterns: a rectangular matrix, a diagonal crisscross pattern, a dot pattern, and a pattern of curved lines. Each is shown at the top or upper left of the four series in the figure. The patterns are picked up as brushes and then superimposed over themselves to make the other patterns in each series.

Different effects are created by offsetting the top brush by one or more pixels in any direction. Multiple layers of brushes can be applied in different colors to make rich and varied moires.

Figure 9-2. Angle Patterns

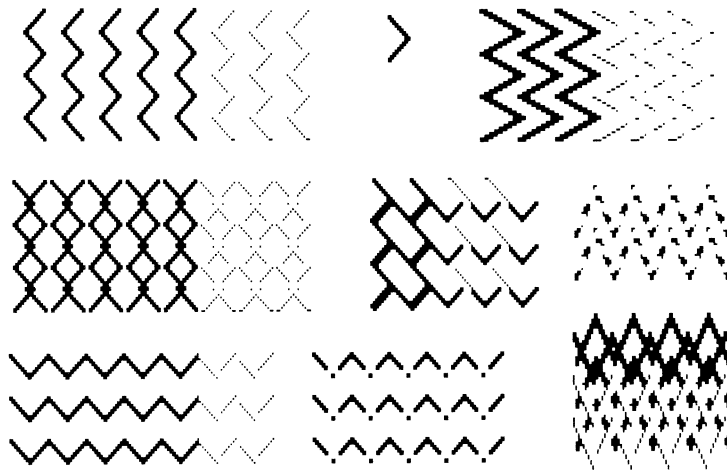
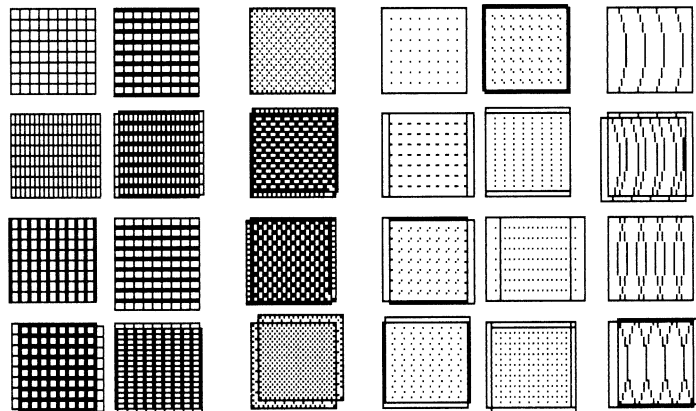


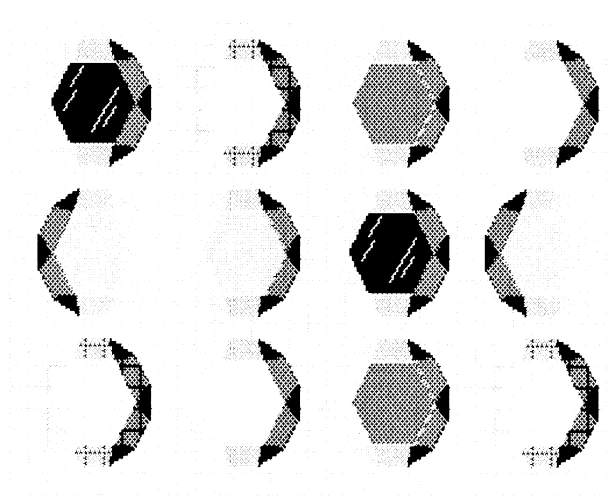
Figure 9-3. Moire Patterns



The grid also assists you in making patterns from more complex brushes. In Figure 9-4, twelve solid and translucent polyhedrons are ordered in a perfect array with the help of the grid. Try this with some of your own brushes. Interesting effects can be achieved by overlapping brushes. For example, you can create an

entire regimental parade from just one soldier, each figure as precisely in step as any drill sergeant could wish. Remember to work from the farthest part of the parade to the nearest.

Figure 9-4. Polyhedron Array



Symmetry Patterns

Deluxe Paint II has, through its symmetry feature, the ability to create patterns that are circular or radial, not based on a matrix of rows and columns. Since symmetry hasn't been discussed yet, let's look at it in detail now.

The symmetry tool is located in the toolbox, next to the grid. Click on it and move the pointer to the page. With a little experimental doodling, you'll find that *Deluxe Paint II* draws mirror multiples of every mark you make. Draw a line, and *Deluxe Paint II* quickly draws 11 more lines, arranged symmetrically around a central point. You can use all the tools and menu options with symmetry except the text tool and the freehand line tool. Custom brushes work, too.

Now right-click on the symmetry tool to bring up the Symmetry box. The Amiga Symmetry box is shown in Figure 9-5, and the Apple IIGS Symmetry box, in Figure 9-6. The box presents the various symmetry options. You can choose between point symmetry (symmetry around a central point) and tile symmetry (symmetry in rows and columns, like a tile floor).

Figure 9-5. Amiga Symmetry Box

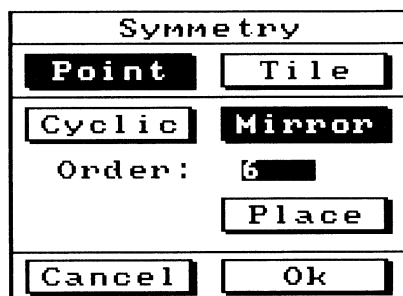
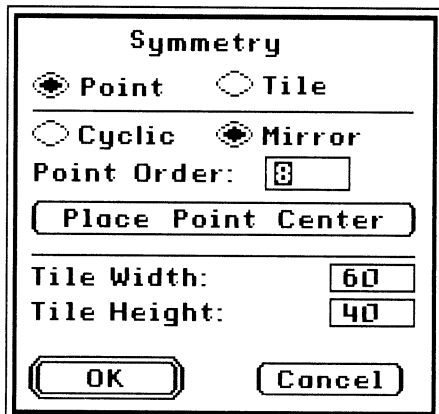


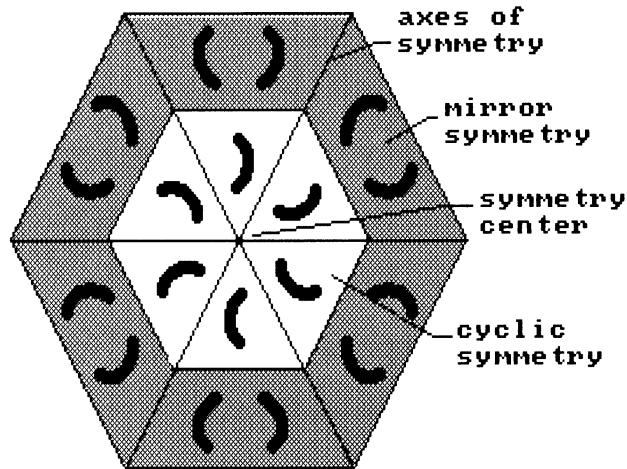
Figure 9-6. Apple IIGS Symmetry Box



Mirror and Cyclic Symmetry

If you choose point symmetry, you have the further option of selecting between two kinds of point symmetry: mirror and cyclic. The difference is illustrated in Figure 9-7. In *mirror symmetry*, your brush has a mirror twin along every axis of symmetry, while in *cyclic symmetry*, the brush is repeated in a rotational manner—it looks as if it's orbiting or spiraling around the symmetry center. Set the order, or number of axes of symmetry, by entering a value of 40 or less in the Symmetry box's order gadget. An order of 6, as in Figure 9-7, yields six repetitions of the brush in cyclic symmetry, and 12 repetitions (six mirrored pairs) in mirror symmetry. The symmetry center can be located anywhere on the page by selecting the place gadget in the Symmetry box, moving the crosshairs to a new location, and clicking to confirm the new center.

Figure 9-7. Mirror and Cyclic Symmetry



The symmetry modes are fun to play with. Here's a few experiments to try.

- » Draw a snowflake, with symmetry at the default settings of point, mirror, and order 6.
- » Use a wedge-shaped brush to make a sunburst like the one in Figure 9-8. What symmetry type and order were used to make this figure?

Figure 9-8. Sunburst

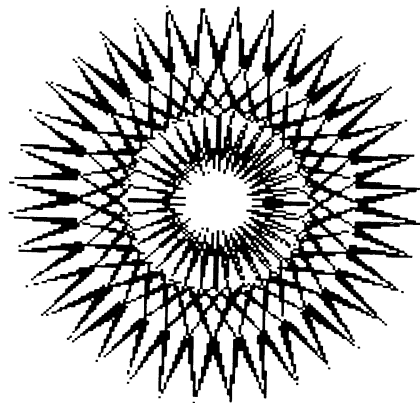
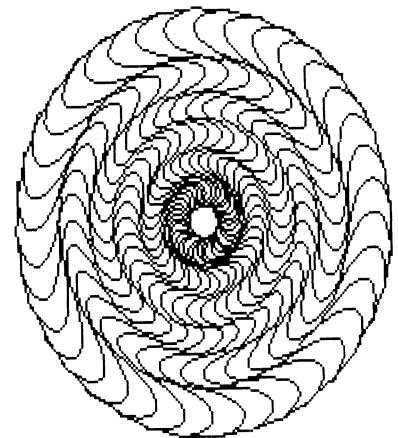


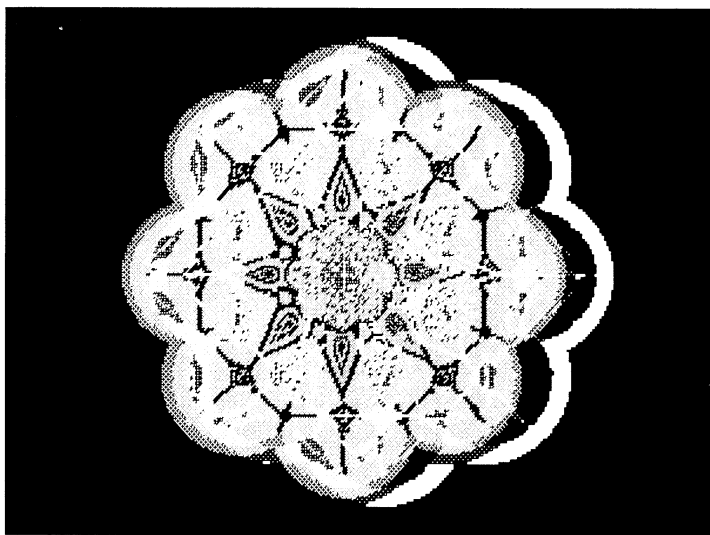
Figure 9-9. Cyclic Rosette



- » Try drawing a hexagon (six sides), octagon (eight sides), and nonagon (nine sides) using just one line. What symmetry type works best for this? How should the line be positioned on the page for the best results?
- » Create a spiraling pattern like the one in Figure 9-9 using cyclic symmetry, a high order, and the curved-line tool. What happens when you fill one of the spaces?

The medallion in Figure 9-10 uses both kinds of point symmetry. The eightfold shape and inner structure are created with mirror symmetry. The eight small medallions surrounding the center are actually the large medallion picked up as a brush, shrunk with the stretch option, and placed with cyclic symmetry. The complex pattern in the very center of the medallion is random scribbling with mirror symmetry. The double leaflets in the outer lobes had to be placed individually by hand; try using an angled brush with the point symmetry options, and you'll see why.

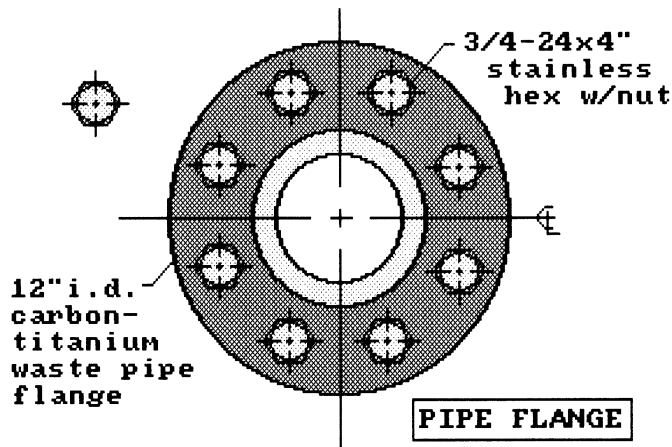
Figure 9-10. Medallion



The symmetry tool has its practical applications. With it, you can quickly draw any regular polygon, as you did above. And you can use it to space identical objects precisely around a center. This is a task that always comes up in mechanical drawings. Figure 9-11 shows an example. To make a similar drawing on paper, you'd have to lay down guide- and centerlines for each bolt and then

draw them one at a time. With *Deluxe Paint II*, you can draw the bolt head once, pick it up as a brush, and then use cyclic symmetry to automatically position the bolt at its eight locations on the pipe flange.

Figure 9-11. Pipe Flange



Tiling

The tile option in the Symmetry box divides the page into rectangular sections and places an identical copy of your brush in each one. If you are using an Amiga, select the tile gadget in the Symmetry box to bring up the Tile box, which shows the tiling information. Note that you can specify the size of the tile in pixels. The default tile values are 60 pixels wide and 40 pixels high. Click on OK to leave that setting for now, and load any brush. Instantly you'll see the brush repeated in tiles like those in Figure 9-12, which shows the size of the default tile. Note that when you move the brush, all the tiles move too. To stamp down a tiled image, click the mouse button.

If your brush is larger than the default size, only part of the brush will be displayed. To show all of the brush, resize the tiles by changing the height and width values in the Tile box until all of the brush is shown.

Here's how to make a tile pattern like the one in Figure 9-15 (an ancient design adapted for architectural ornamentation by the eleventh-century Seljuk Turks).

Figure 9-12. Tile Size

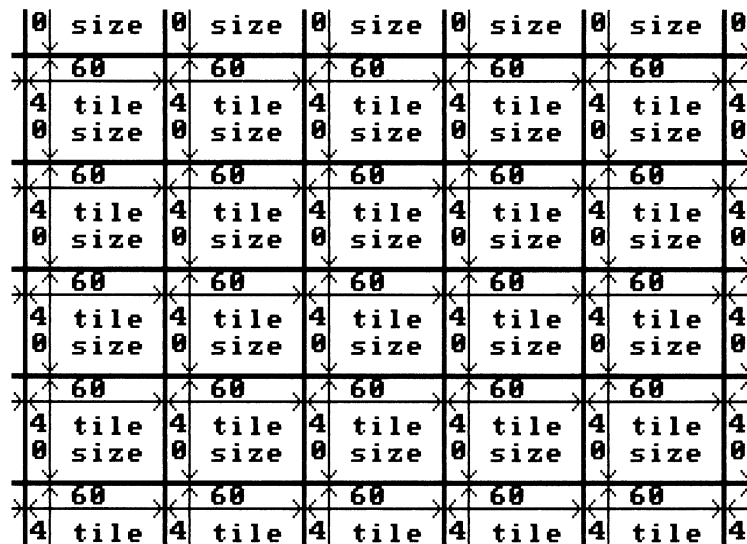
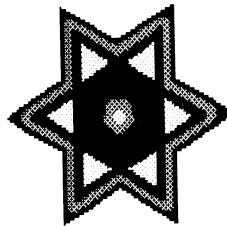


Figure 9-13. Seljuk Star



- » Draw the star in Figure 9-13. Use cyclic symmetry to draw the outline. The Seljuks favored a color scheme of lapis lazuli (deep blue-turquoise), pale green, ivory, and gold.
- » Pick up the star as a brush and stamp down four clones around it, as in Figure 9-14. Make sure the star centers are perfectly aligned—use scaffolding and center lines if you need them.
- » Now pick up a new brush exactly the size of the rectangle in Figure 9-14. The corners of the brush must coincide exactly with the centers of the four outer stars.
- » For the tiling to work properly with this brush, you've got to know the brush's exact dimensions in pixels. Turn on the coordinates and carefully measure the brush. The brush in Figure 9-14 is 140 pixels wide and 80 pixels high.
- » Clear the screen and turn on tile symmetry. Enter the brush dimensions in the Tile box. Click on OK, and the page should fill with a seamless tile pattern. If there are extraneous lines in the tile, adjust the values in the Tile box until they disappear. To

Figure 9-14. Seljuk Brush

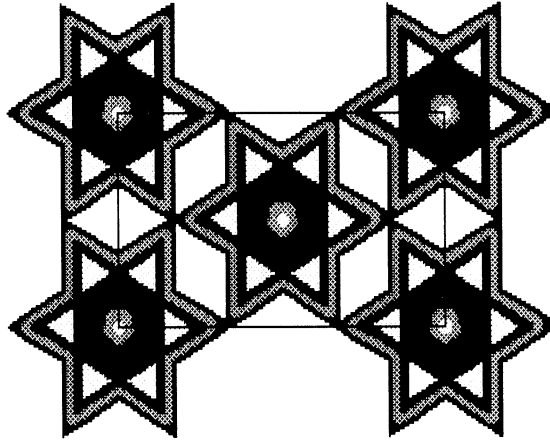
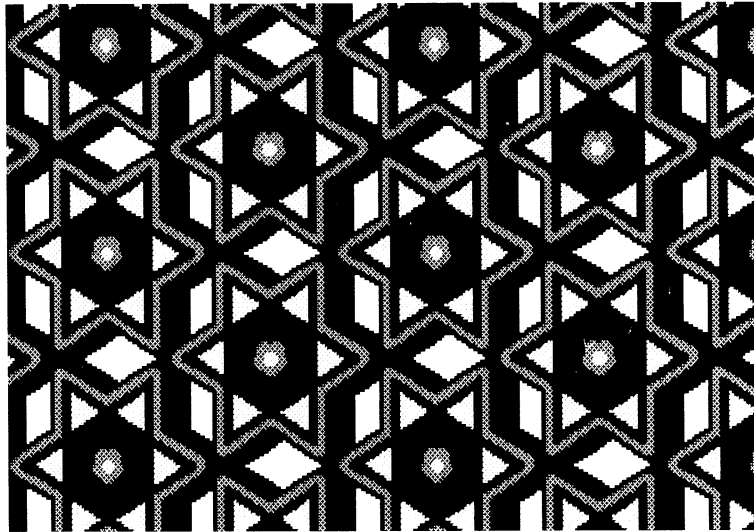


Figure 9-15. Seljuk Screen



give the pattern thickness, like a metal screen, drag the brush with the freehand line tool. All the tiles will move with it. The completed pattern is shown in Figure 9-15.

Pattern Fill

Deluxe Paint II's pattern-fill feature allows any brush to be the basis for a pattern that can be used to fill any enclosed area anywhere on the page.

Using pattern fill is much like using the other fill features. Pick up your brush, call up the Fill Type box (see Chapter 3 for an illustration), then click on Pattern and FromBrush. The preview gadget in the Fill Type box shows you how the pattern will look. Click on OK—from then on, the fill tool and the solid-shape tools will fill with that pattern until you select another fill option. A small box in the menu bar tells you what fill option is currently selected.

Try drawing a few random shapes, then creating a fill pattern with a brush, and filling those shapes. The only hard part is how to construct and pick up your brush to get a seamless pattern. If the brush has an extra line on one or more sides, that line will be incorporated into the pattern (in fact, it will be doubled), even if the extra line was invisible when you picked up the brush because it was in the background color. You must pick up precisely the image you want to repeat, no more and no less. Note that when you're creating a custom brush, the pixels under the brush-selection box will be included in the brush.

Many patterns require that each repeating element link up to the next in some way—for example, by sharing an area of color. You'll need to pay close attention to how your brush is constructed to get the pattern you want. Look again at Figure 9-14, the Seljuk star brush. How would the tile pattern be different if just the central star were used as the basis for the tile? Try both and see. The same principle applies to brushes created for pattern fill.

Using Pattern Fill

You'll find an infinite number of ways to use pattern fill. Just a few applications are shown below.

Figure 9-16 is a plaid pattern. The original can be seen in Figure 4-15; note how the plaid is constructed to link with itself in a pattern. To get a sense of how a wide swatch of cloth would look in that plaid, an entire page is covered using pattern fill. At this stage, a textile designer could make fine adjustments in color to the plaid, or perhaps add an overlaid or other pattern on top.

A garment designer could then take the plaid, shrink it, and fill the outline of a shirt (as in Figure 9-17) to see how it would look as part of a finished product. Notice that the plaid fills every area of the shirt, but that it doesn't follow the shirt's contours, as real cloth would.

Figure 9-16. Plaid

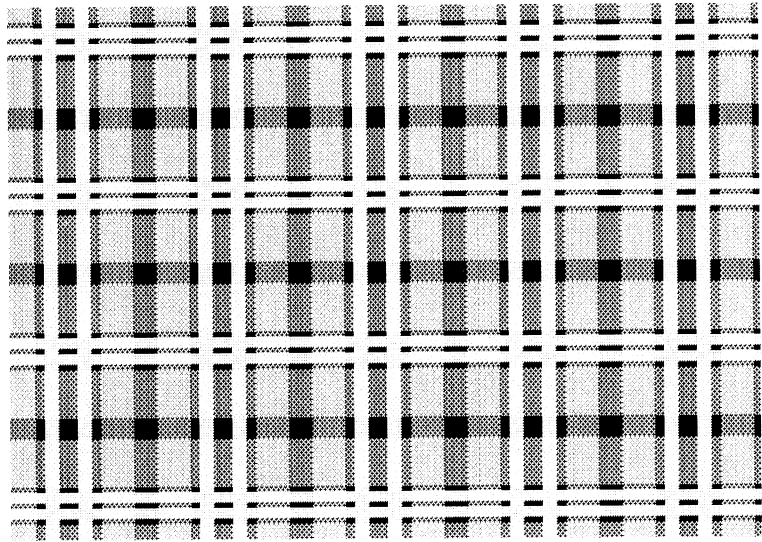
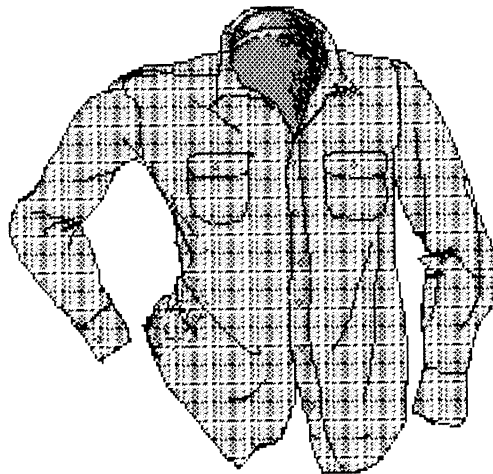


Figure 9-17. Plaid Shirt



The geisha in Figure 9-18 is wearing several layers of silk, each with its own pattern. All the patterns were added with pattern fill except for the floral pattern, which was drawn in by hand with a flower brush so it would follow the contour of her robe. Mixing filled and hand-drawn patterns is a good way to add pattern variety. The snowy background was created with a simple fill pattern as well.

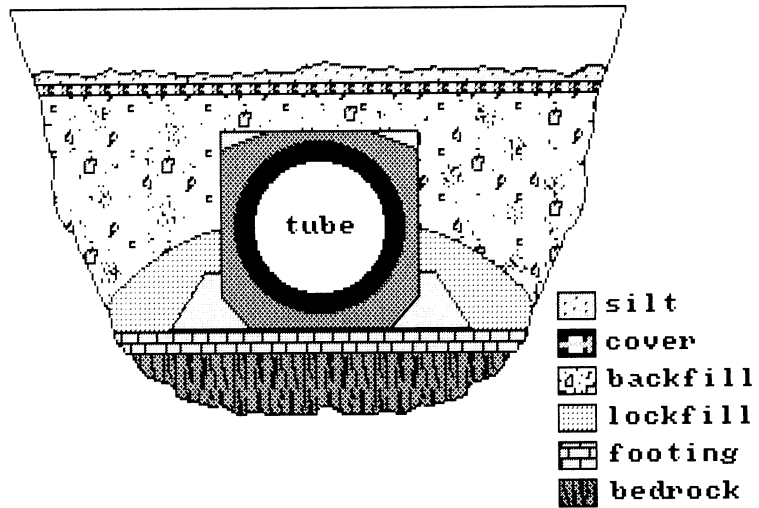
Figure 9-18. Geisha Patterns



Another application for pattern filling is to differentiate areas in a technical drawing. The patterns chosen should relate to the materials they represent: a fill pattern to represent concrete should look like a sandy, stony aggregate, a brick pattern should indicate brick, and so on. Many materials have standard fill patterns that are already widely accepted for use in technical drawings; you can copy these for your own work.

In Figure 9-19, the undersea tube and its related structures are filled with different patterns. The patterns are keyed to a legend explaining their use.

Figure 9-19. Undersea Tube



There's one more pattern-fill type that hasn't been discussed yet—the perspective-fill feature. That's covered, as well as *Deluxe Paint II's* other perspective effects, in the next chapter.

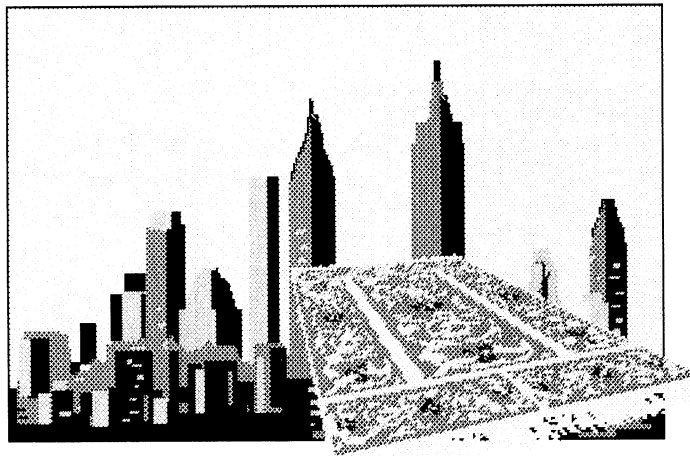
CHAPTER 10
Perspective

T

he universe is three-dimensional, but canvas and computer displays are two-dimensional. Thus, artists seeking to present realistic imagery have developed systems of perspective, pictorial methods for representing spatial depth on a flat surface. There are several systems of perspective, but the best known and most geometrically complex is *linear perspective*.

In linear perspective, objects are drawn so that they mimic the apparent decrease in size from foreground to background of real three-dimensional objects, as the flying carpet does in Figure 10-1.

Figure 10-1. Flying Carpet



While the skyline looks flat, without depth, you perceive the carpet as existing in three-dimensional space, one end farther from you than the other. Linear cues like the convergence of the sides of the carpet, and other cues like the increasing compression of the carpet's design toward the narrower end, help you to see the carpet as an object in space, even though it's really just as flat as the background.

This kind of perspective, which was not perfected until the fifteenth century, is not easy to use, especially with complex, nonlinear imagery. It would take considerable skill and a taste for geometry to paint the floral pattern on the rug by hand so that it receded convincingly into space. For this reason, most artists rarely use perspective in a rigorous way. But *Deluxe Paint II*'s perspective feature can put a rug, and any other flat plane, into perspective quickly and with a minimum of effort and skill on your part.

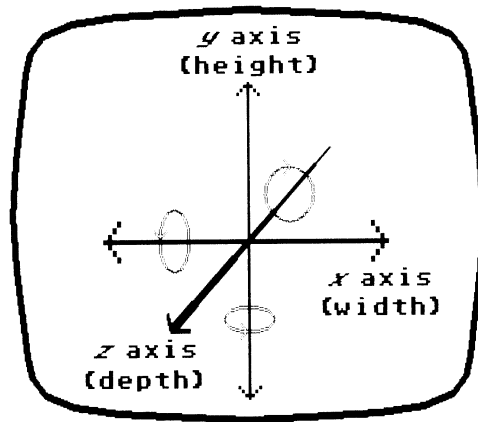
In this chapter you'll review the basics of perspective theory and learn several ways to create perspective views. Before you read on, you should work through the tutorial on perspective in Chapter 3 of your *Deluxe Paint II* manual, and scan the reference section on perspective in the manual's Chapter 4. Try the perspective exercises in the manual, such as creating cubes and making a row of homes, and make sure you're familiar with the menu and keyboard perspective controls. Note that perspective is the one major *Deluxe Paint II* feature that is controlled mainly from the keyboard. A diagram of the perspective keyboard commands can be found in Appendix 2 of that manual.

Perspective Theory

Linear perspective is really a matter of arranging lines to create the illusion of depth. Before drawing anything, however, you must establish a framework for describing location and movement in space. *Deluxe Paint II* uses the x, y, z coordinate system diagrammed in Figure 10-2. Movement of an object along the x axis is movement from side to side of the computer screen; an object rotated along the x axis flips head over heels. Y -axis movement is along the vertical dimension of the screen; an object rotating on its y axis spins like a top. Movement in depth—from close to the viewer to far away—is measured along the z axis. Z -axis rotation is like that of a windmill seen from the front. All rotations in *Deluxe Paint II* are measured in angle degrees, and are displayed on the Amiga's menu bar and the IIGS's Info bar when you're in Perspective mode.

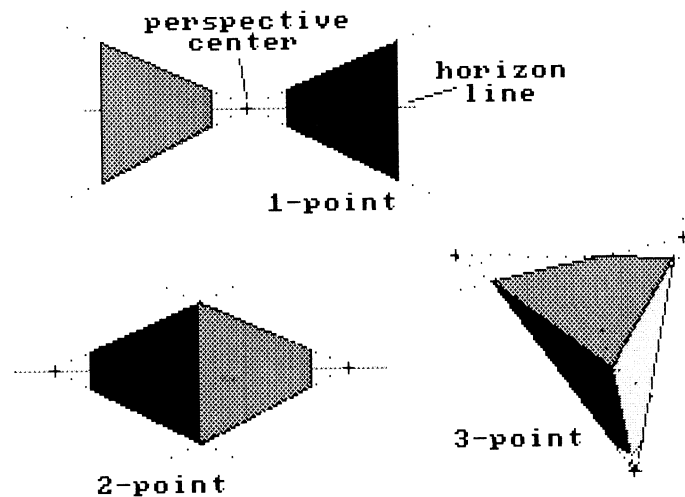
Basic to linear perspective is the concept of the *horizon line*, which indicates the viewer's eye level, and the *vanishing point*, called in *Deluxe Paint II* the *perspective center*. In one-point perspective, shown at the top in Figure 10-3, lines along the z axis (that is, lines that directly indicate the object's depth) converge on a single perspective center. All objects appear to recede toward this point. Horizontal and vertical (x - and y -axis) lines also are affected

Figure 10-2. X, Y, and Z Axes



by perspective, but indirectly; they don't converge on the perspective center, but they do bunch up as they get closer to the perspective center. Think of a line of telephone poles receding into the distance—the poles nearest to you appear to be far apart, but the ones approaching the horizon appear to be close together or even overlapping, although the space between them doesn't really change.

Figure 10-3. Perspective Types



Another type of perspective is two-point perspective (bottom left in Figure 10-3), also called *angular* or *oblique perspective*. This employs two perspective centers instead of one. This is the type of perspective used when you're drawing the corner of a building or other object seen at an angle. Three-point perspective (bottom right) is especially useful when the viewer is not at ground level but is above or below a three-dimensional object. For example, you would use three-point perspective to draw a skyscraper as seen from a helicopter flying over it.

One-point perspective is the standard mode in *Deluxe Paint II*. You can set a perspective center anywhere on the page (or, if you're using an oversize page, anywhere on the page's visible area), and planes rotated at an angle will automatically seem to recede toward it. Most two-point perspective views are possible as well—an edge-on view of a rectangular object like the one in Figure 10-3 can be made simply by drawing one side and then rotating it 90 degrees to make the other. Creating true three-point perspective with *Deluxe Paint II* is impossible, however. Each plane of an object in three-point perspective recedes toward two perspective centers at once, but only one *Deluxe Paint II* perspective center can be active at a time.

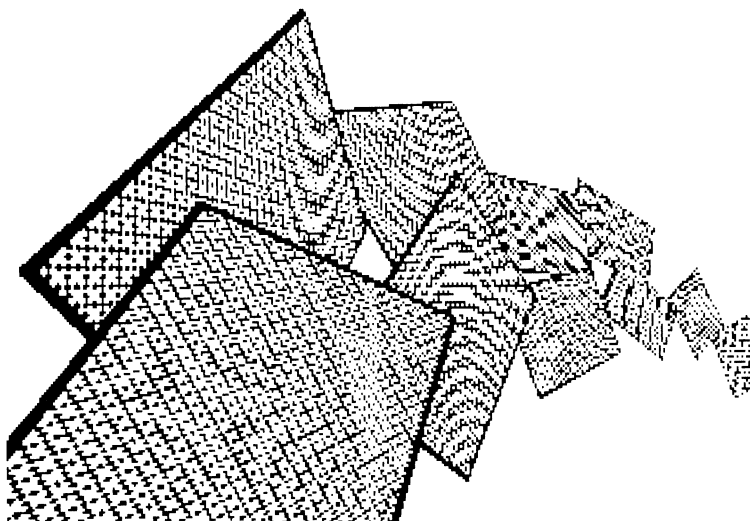
If you need to draw an object in three-point perspective, you'll have to do it manually by picking the three perspective centers, drawing lines from them with the straight-line tool, and so on. That's what was done in Figure 10-3.

Wild Cards

Let's practice manipulating planes in space by creating a pack of flying cards like the one in Figure 10-4. Here's how.

- » Find a playing card with a geometrical pattern on the back and draw the back of the card. Or create any pattern of your own and use it to fill a rectangle that's about twice as high as it is wide.
- » Pick up the card as a brush (make sure the brush-selection box coincides exactly with the outline of the card) and enter Perspective mode by pressing the ENTER key on the numeric keypad. The brush will be replaced by a four-part matrix. Set the perspective center about one inch from the right-hand side of the page and about two inches from the bottom. Now make sure all the axes are set to zero by pressing 0 on the keypad.
- » Since the cards will overlap, nearer in front of farther, you must start with the farthest card (farthest along the z axis) and work

Figure 10-4. Wild Cards



out to the nearest card (the one at lower left). Move the matrix to the right, and then use the shifted ' (apostrophe) key to move into the picture until the matrix is quite small. Click to paint the first card.

- » Now you can paint the rest of the cards. Move the matrix a bit to the left and toward the viewer (with the shifted ; [semicolon] key), then rotate each card along its x , y , and z axes (using the numeric keys on the keypad) to give the appearance of random tumbling. Note that the brush rotates around its brush handle. The final card should look as if it's flying right under the viewer's nose. If you need to touch up your work, you can exit perspective by selecting any other drawing tool and brush.

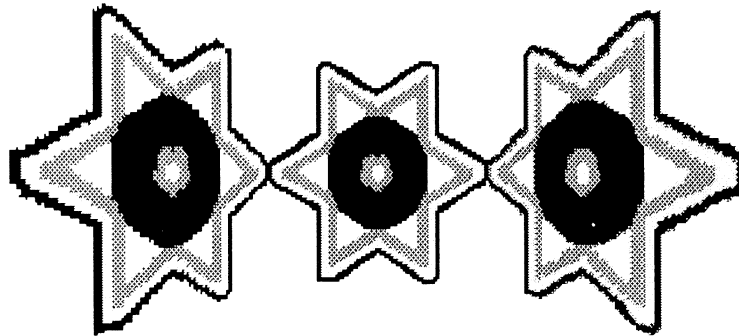
Antialiasing

You've probably noticed that the diagonal pattern on the back of the cards in Figure 10-4 is subject to a moire-type distortion. Try this experiment: turn on the grid, draw a patch of gridding with the straight-line tool, pick it up as a brush, enter the Perspective mode, and rotate the grid brush 45 degrees along the y axis. What happens to the grid when it's painted in perspective? This distortion is an artifact of the way *Deluxe Paint II* plots perspective, and there's not too much you can do about it. You can exit perspective and fix

it by hand, or simply avoid using grids and diagonal patterns in perspective.

Another kind of distortion occurs when brushes are put into perspective—they acquire staircased or *aliased edges*, just as if they were rotated at an odd angle. There *is* something you can do about this. *Deluxe Paint II* contains an antialiasing feature, a process that automatically smooths out the entire image, including ragged edges, in much the same way that the Smooth feature in the Mode menu does. Antialiasing works as shown in Figure 10-5. The star on the left is not antialiased, but the one on the right is. The right star is noticeably smoother than the one on the left.

Figure 10-5. Antialiasing



You can antialias any brush by first choosing the appropriate option in the Amiga's Perspective submenu or the IIGS's Perspective Options box, then entering Perspective mode, and finally stamping down a copy of the brush. Two levels of antialiasing, low and high, are available. Both slow down the painting of a brush considerably. Another tradeoff is that antialiased images lose some of their sharpness. If clean lines and color transitions are important for your image, it may be better not to antialias the whole brush, but to clean it up with small brushes set to Smooth.

Perspective Text

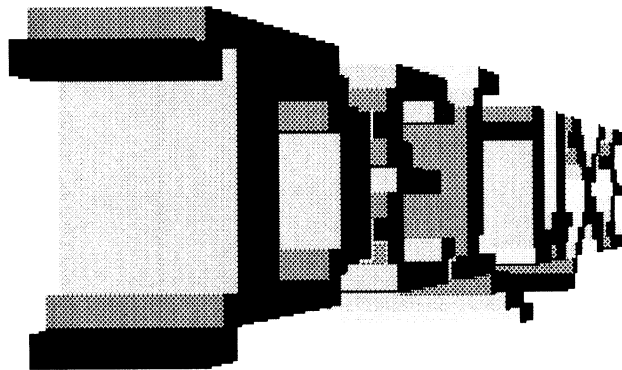
Some interesting and relatively easy tricks can be done with text put into perspective. Try this.

- » Set the background color to black, and type out a paragraph or two of text—say, the Gettysburg Address—in gold letters on a black background.

- » On the spare page, draw a star field. Set the airbrush to a wide diameter and use a one-pixel brush to create clusters of stars.
- » Return to the first page, pick up the text as a brush, and enter Perspective mode. Rotate the brush along the *x* axis until its top seems to recede into the upper middle distance.
- » Stamp down the text over the star field on the spare page. You now have a facsimile of the titling effect used in some very well-known science-fiction films.

Figure 10-6 illustrates another use of text in perspective. The original word *DELUXE* was typed out using one of the Amiga's built-in fonts, then expanded to several times normal size. The letters were then outlined in various colors, with each staircase in the letters given its own color. The word was then picked up as a brush and rotated in perspective along the *y* axis. Finally, perspective was turned off, and the word was picked up as a brush again and dragged to the right with the straight-line tool. The result has both monumentality and three-dimensionality.

Figure 10-6. Perspective *DELUXE*



Using the Grid in Perspective

As you may already have discovered, it's not easy to position brushes in perspective with precision, especially if you want to put two or more brushes together at different perspective angles or space them exact distances apart. The grid tool, which is active in Perspective mode, can be very helpful for this.

Enter the Perspective mode and right-click on the grid tool to bring up the Perspective Grid box. The Amiga version is shown in Figure 10-7 and the Apple IIGS version in Figure 10-8.

Figure 10-7. Amiga Perspective Grid Box

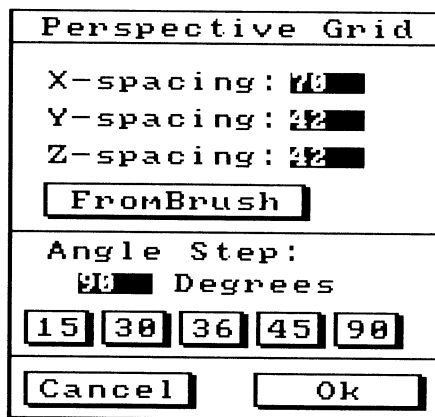
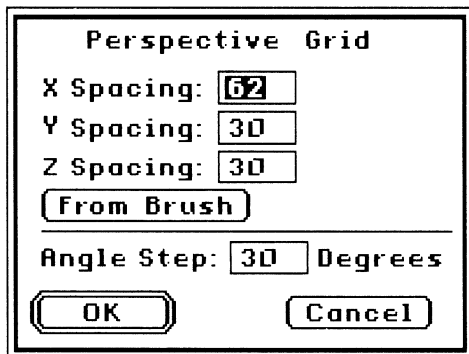


Figure 10-8. Apple IIgs Perspective Grid Box



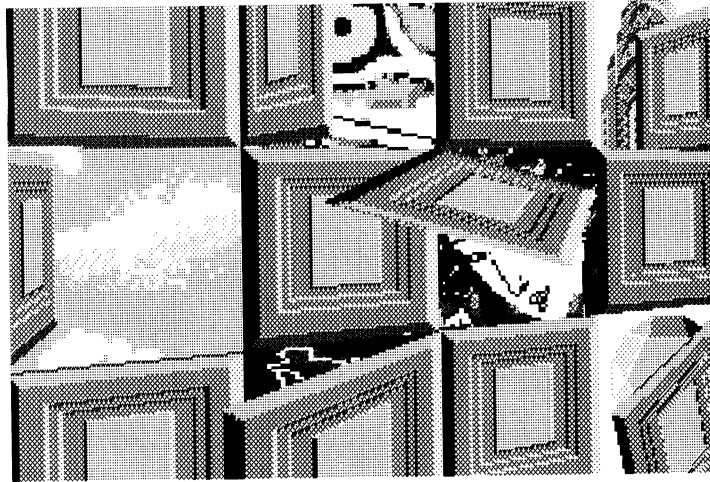
The Perspective Grid box lets you set the spacing of the grid along all three axes, either by typing a value (in pixels) in the spacing gadgets or by taking the spacing directly from the brush dimensions. Unless you specify otherwise, the z value defaults to the y value.

You can also set increments of brush rotation in perspective. These apply when you use the axis-rotation keys on the numeric keypad while pressing the SHIFT key. Normally your brush will rotate 90 degrees (the default value), but you can specify any other increment of rotation in degrees.

A basic application of the use of the grid in perspective is illustrated in Figure 10-9. Arranging the panels to line up exactly, even when rotated, is a task made far easier with the grid. For this pic-

ture, the grid spacing is set to the brush size (the panel is a square, but any other shape can be used), with 15 degrees as the selected increment of rotation. The perspective center is set at the center of the page. The panel brush is grabbed by the lower right corner (in general, you should pick up any brush by the corner when you're planning to use perspective) and rotated 15 degrees on the y axis.

Figure 10-9. Panels



Once the grid is on, the brush snaps to the grid no matter how the brush is rotated, and the grid always conforms to the spatial orientation of the brush. You can't paint the brush in one orientation, and then change the perspective of the brush while keeping the grid orientation the same as it was before.

The open panels are made by rotating the panel brush more than 15 degrees around the y axis, or by rotating it along the x and z axes as well. To get them to open along different edges, you must change the corner that the brush handle is on. You can do this by rotating or flipping the brush with the Brush menu, but that will make the brush look upside down or inverted. With the panels in Figure 10-9, that's not a big problem, since they're square and nearly symmetrical. Other brushes, however, may not look right in a different orientation. The geisha, hawk, and other pictures in Figure 10-9 can be slipped in behind the panels using the Stencil tool.

Using Perspective for Architectural Rendering

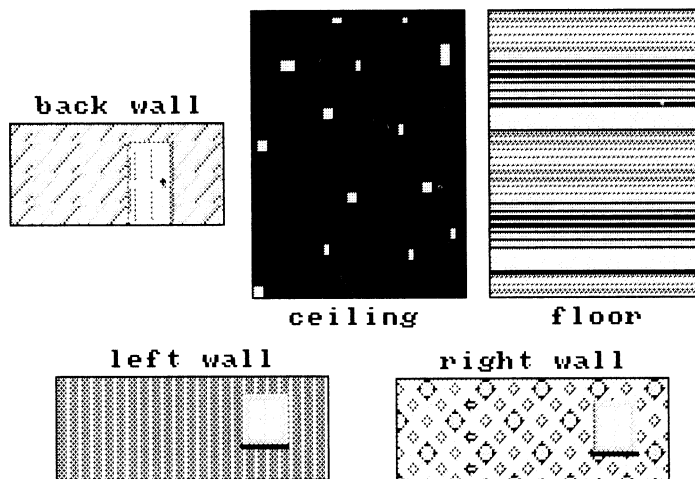
The Renaissance painters developed linear perspective to help them render architecture with maximum fidelity to its actual appearance. Today, that's still its main application. The next two exercises use *Deluxe Paint II's* perspective tool to create an interior and an exterior scene.

A Patterned Interior

Let's use perspective to create the inside of a room.

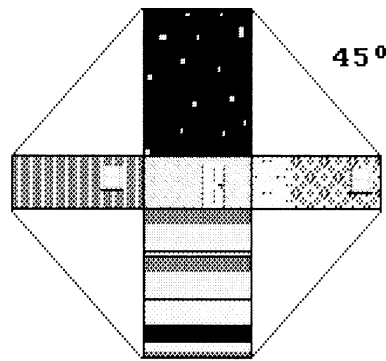
- » First, you need drawings of the room's five visible walls: left and right walls, back wall, ceiling, and floor. The sixth wall is behind the viewer and thus invisible. The walls are shown in Figure 10-10.

Figure 10-10. Interior 1



- » To fit together properly, walls, floor, and ceiling have to be in the correct proportions. Think of the room as an open-ended box. If you cut open and flatten out such a box, you'd see something like Figure 10-11. The left and right walls are the same size, as are the ceiling and floor. The height of the floor and ceiling must be the same as the width of the left and right walls. The back wall is the width of the floor and ceiling and the height of the left and right walls. Draw a line at a 45-degree angle to check the accuracy of your drawing, as you see in Figure 10-11.

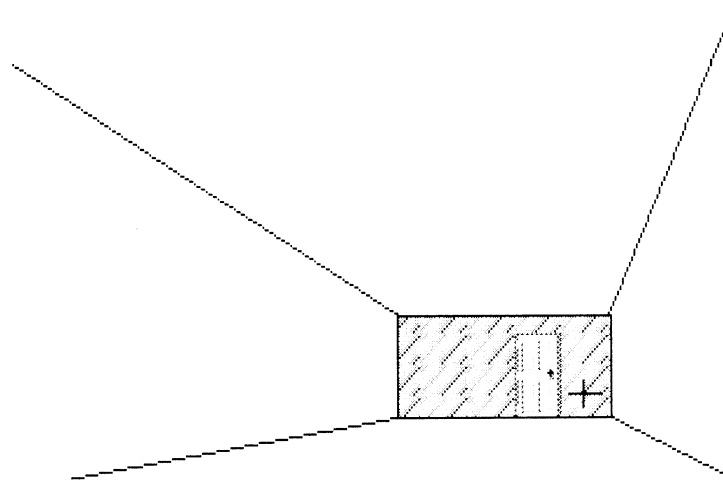
Figure 10-11. Interior 2



» Set up an outline of the room to see how it will look. Paint in the back wall and pick a location for the perspective center. (Don't actually place the center yet.) Draw lines that originate at the perspective center and intersect the four corners of the back wall, as in Figure 10-12. These lines represent the intersection of the ceiling, floor, and left and right walls. To change the view,

relocate the back wall and the perspective center, then draw new lines until you're satisfied with the effect. If objects are going to be in the room, make sure the perspective of the room and the perspectives of the objects correspond.

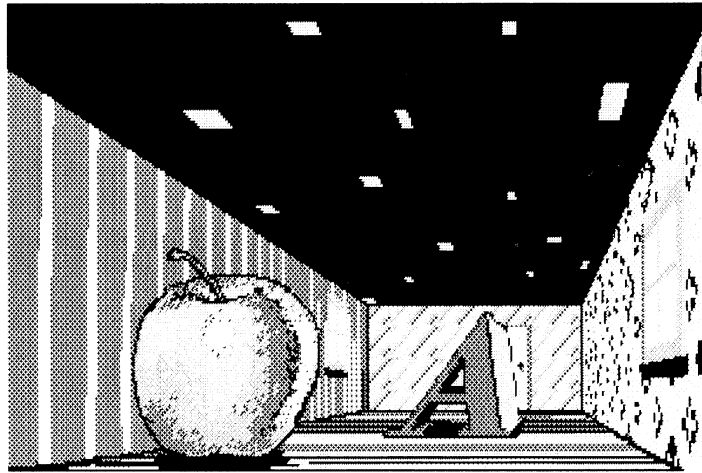
Figure 10-12. Interior 3



» Now enter Perspective mode, set the perspective center, and paint in the panels of the room, right over the drawing with the outlines. Pick up the left wall with the brush handle at the right-hand corner and line up the right edge with the left edge of the back wall. Rotate the wall counterclockwise along the y axis until it fills the outline. Do the same for the right wall, except pick it

up with the brush handle at the lower left corner, line it up with the right edge of the back wall, and rotate it clockwise. The ceiling and floor are aligned with the upper and lower edges of the back wall and then rotated along the x axis. Finally, use small brushes and erasers to clean up any areas along the wall intersections that look a bit ragged. The result will be a perspective interior like the one in Figure 10-13.

Figure 10-13. Interior 4



An Abandoned Temple

You can use perspective to make all kinds of exterior scenes. Here's how to make a perspective picture of an abandoned Greek temple.

- » Start by drawing a column, as in Figure 10-14. It should have a minimum of vertical lines—that means no fluting—because *Deluxe Paint II's* perspective feature distorts parallel vertical lines more than others. Give the column a capital (top), a base, some shading, and shadows.
- » Pick up the column as a brush and make a colonnade the width of the page (see Figure 10-15). Note that the shadows on each of the columns fit together with the shadows on either side.
- » Pick up the colonnade as a brush with the handle at lower right. Enter Perspective mode. Set the perspective center just to the left of the center of the page. Move the perspective matrix back along the z axis until it appears to be some distance away. Rotate the left edge forward along the y axis about 15 degrees, so that it

Figure 10-14. Columns 1

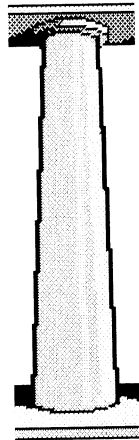
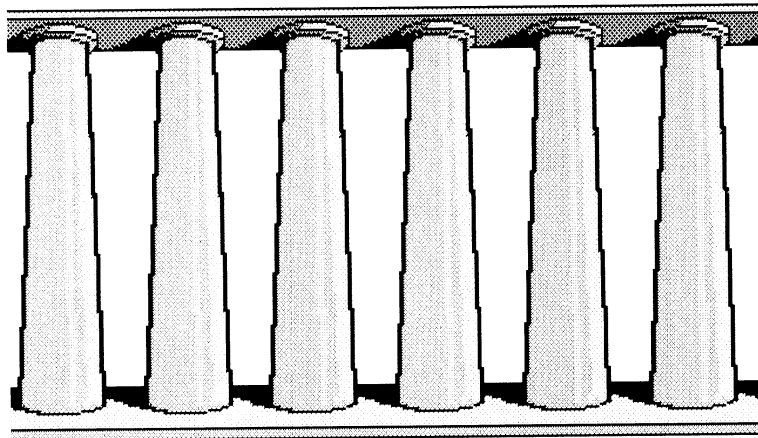
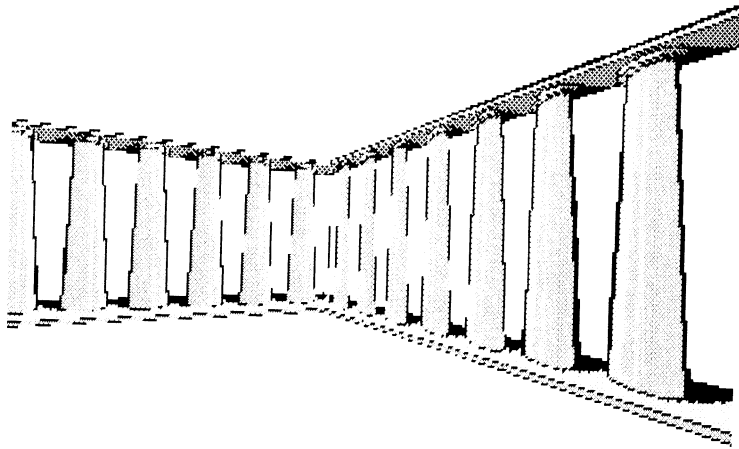


Figure 10-15. Columns 2



looks like the farther wall in Figure 10-16. Stamp down that brush. Now, without moving the mouse at all, rotate the matrix counterclockwise 90 degrees along the y axis and stamp it down. You should now have the two walls of Figure 10-16. (Note that the shading and shadows of the right-hand colonnade are all reversed.)

Figure 10-16. Columns 3



- » To create the nearest wall, move the matrix toward the right-hand side of the page until its left edge coincides with the right edge of the right-hand colonnade. Without moving the mouse any further, rotate the matrix clockwise on the y axis about 80 degrees. Stamp that brush down. Figure 10-17 shows how this should look—a rectangular colonnade enclosing an empty interior space.

Figure 10-17. Columns 4



- » Now for the final touches. First, use the fill tool and some small built-in brushes (you can exit the Perspective mode) to reverse the shading on the second colonnade you made. Change the direction of the shadows on that colonnade as well.
- » Paint in a background. Make a stencil from the colors of the colonnade so you can paint behind the temple, which should appear to be situated on a mountaintop.
- » The columns will cast shadows, so some can be added to the ground within the temple. Use the angle of the shadows on the colonnades to help you gauge the angles of the shadows on the ground. In Figure 10-18 the lighting comes from upper right. The shadows help give the abandoned temple an air of desolation.

Figure 10-18. Columns 5



One thing you'll have noticed in creating this temple is that the colonnades stay resolutely flat—they look like paper cutouts of columns in perspective, rather than real, round columns. Keep in mind that *Deluxe Paint II* deals with planes only, not three-dimensional objects. Anything *Deluxe Paint II* shows in perspective will look flat as a pancake.

Filling with Perspective

Deluxe Paint II gives you the option of filling enclosed areas with patterns in perspective with the perspective-fill feature (selectable from the Fill Type box). The Amiga also offers a Fullscreen menu option that will fill the entire page. Both fills use the current brush at its current perspective.

Figure 10-19 demonstrates the Amiga's Fullscreen feature. It was made by rotating a six-panel brush (with the Chrysler Building at upper left and the polyhedron at lower right) along the x and z axes, and then choosing Fullscreen.

Deluxe Paint II automatically (and slowly) fills the entire page with a pattern from the brush. Try this with one or more of your own brushes at various angles of rotation. This feature is an encouragement to create all kinds of surreal science fiction-like vistas, with objects endlessly repeating into infinite space.

Figure 10-19. Fullscreen

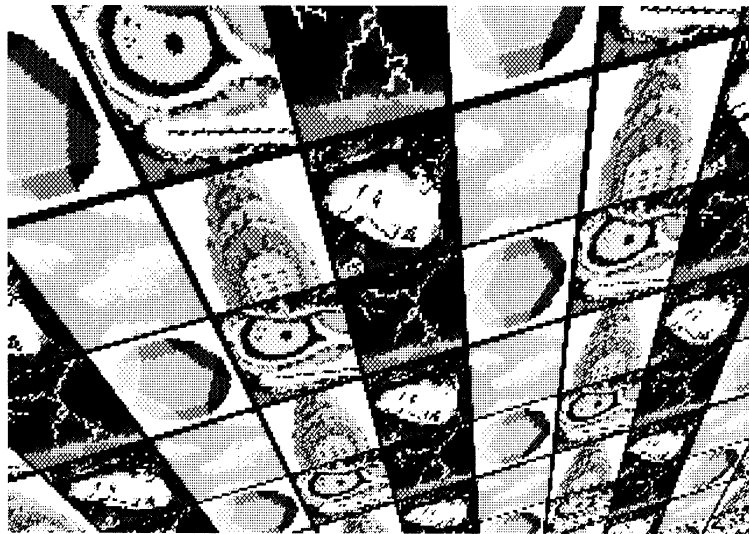
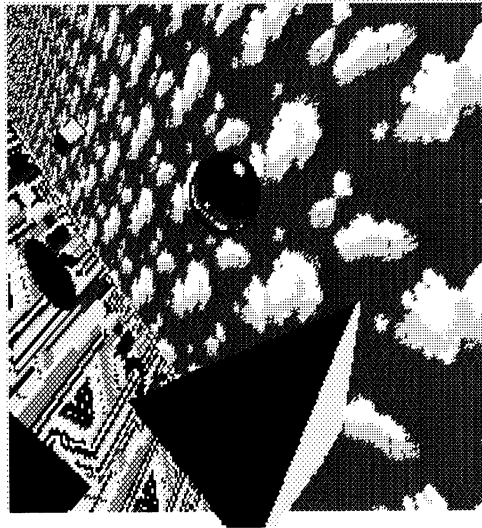


Figure 10-20 shows a case in point. The cloudscape area is filled with perspective fill, as is the slanted plane of electronic circuitry (one side of a pyramid). Orbiting around the pyramid are Electronic Arts' geometrical mascots—the cube, sphere, and tetrahedron.

Figure 10-20. We See Farther



In Conclusion

Perspective is *Deluxe Paint II*'s most complex feature, one that even the program's creator, Dan Silva, says he hasn't explored to its fullest. The few projects presented here only scratch the surface of perspective's possibilities. There is unlimited opportunity to make discoveries on your own.

That applies to *Deluxe Paint II* as a whole. With so many tools and features at your disposal, it's unlikely that you'll ever exhaust the technical means that *Deluxe Paint II* offers. If you're a novice artist, your study of *Deluxe Paint II* techniques will give you a congenial way to educate yourself about art techniques in general. Most of the techniques discussed in how-to books on drawing, painting, and design apply to art created with *Deluxe Paint II*. Even more valuable is the examination of existing works of art to learn how other artists solved problems: how the Renaissance painters modeled the figure and used perspective; how the Impressionists depicted the effects of light and color; how the medieval Persian miniaturists used patterns to enclose and enhance their illustrations; how the Chinese developed atmospheric perspective to its highest level; and how modern design illustrators render gleaming

surfaces and use text to enhance their images. Copy what you see; then develop variations and hybrids as you move toward your own visual style.

You'll need to use all your vision, sensibility, determination, and courage. If you do, *Deluxe Paint II* can help you to a new understanding of art and of yourself as an artist.

CHAPTER 11
Creating a
Deluxe Paint II
Picture

B

y now, you've seen what *Deluxe Paint II* can do. Its tools are impressive, its palette almost limitless, and its flexibility nearly infinite. But, even though *Using Deluxe Paint II* has shown you countless examples of art and graphics created with the program, you have yet to see the *process* of art with *Deluxe Paint II*.

This chapter is a step-by-step guide to applying *Deluxe Paint II's* computer-age tools to a very traditional graphic project—a landscape. In this case, it's a landscape of Ponte Vecchio, a bridge over the River Arno in Florence, Italy. You'll need to use the basic drawing tools: the custom-brush tool; the palette controls; various painting modes; magnify, stencil, and the spare screen; pattern creation and filling; and perspective.

Set the Palette

Before you begin, set up your palette. (You can modify it later, of course.) This project has been designed with 16 colors. If you have an Amiga, you can add more colors in between the ones defined below.

The Tuscan landscape is famously luminous, so you'll want to use glowing, saturated colors: cream, salmon, pale gold, and brick red for the bridge and other buildings; deep blue-greens for the waters of the Arno; green-golds for the distant hills; and cerulean, white, and light gray for the sky and clouds. White (RGB 15-15-15) will serve as the background color. Here's a table that gives the suggested palette settings.

Table 11-1. Palette Settings

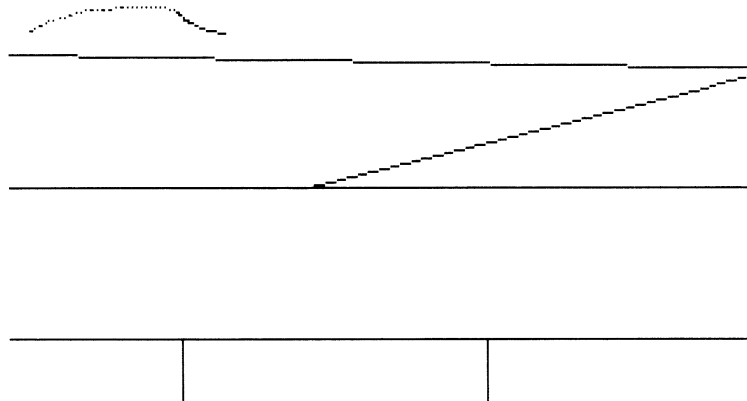
Color #	R	G	B	Color #	R	G	B
0	0	0	0	8	0	3	4
1	15	15	15	9	10	10	4
2	15	9	9	10	9	6	0
3	15	13	7	11	4	6	0
4	13	9	4	12	2	4	0
5	7	1	1	13	9	13	15
6	0	7	9	14	6	10	14
7	0	5	6	15	12	12	12

One

As with any complex picture, the first thing to do is to plan your composition. You can use scaffolding lines as in Figure 11-1, recognizing that these are just guidelines, not instructions carved in stone. The solid horizontal parallel lines outline the bridge itself, and the dashed receding lines define the riverbank, the roof line of the buildings along the bank, and an indication of distant hills. Although there's no visual indication yet, assume that the light is coming from the upper left and that it's a typically sunny day.

It's good practice to save a copy of your composition plan as a separate file so that you can refer to it later and draw over it in different stages.

Figure 11-1. Outlines

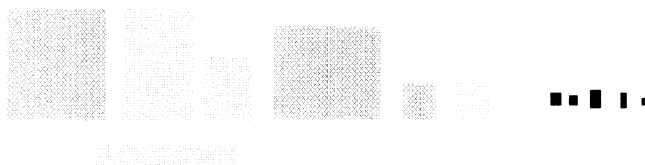


Two

It's usually best to start with the more distant areas of the picture and work toward the foreground. A logical place to begin is with the riverbank buildings, since these will be partly obscured by the bridge itself.

First, block out some building façades with the filled-rectangle tool. The small black rectangles are windows made with built-in brushes.

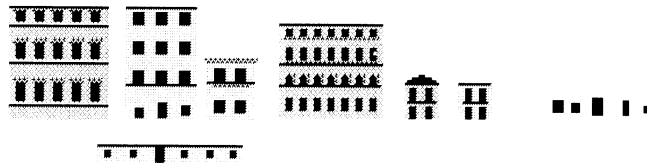
Figure 11-2. Buildings 1



Three

Note the characteristic size and placement of the windows and other details. Leave off the roofs for now—you'll put them in by hand later.

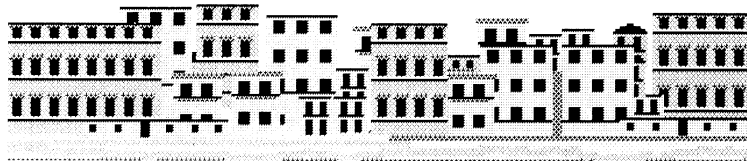
Figure 11-3. Buildings 2



Four

Create a row of buildings by picking up the façades you've created as custom brushes. Mix sizes and heights, working right to left (making sure buildings only overlap the structures to their right) and back to front. Add an embankment at the bottom.

Figure 11-4. Buildings 3



Five

Use the row of buildings to create a skyline in perspective.

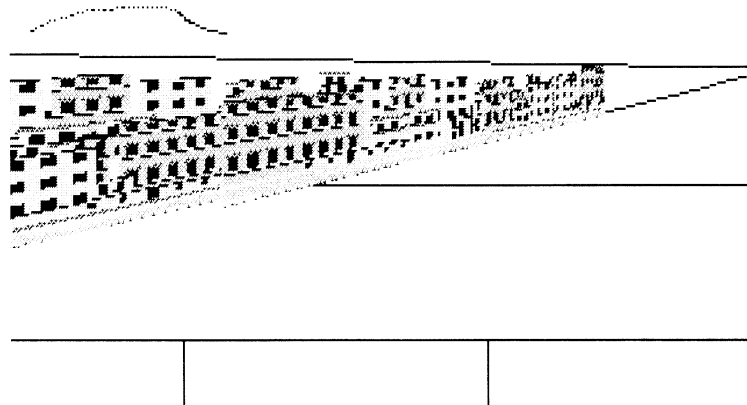
- » Load your composition outline onto the spare page.
- » Return to the other page and pick up the row of buildings by the lower left corner (use the Corner Brush option).
- » Enter perspective (press Enter on the numeric keypad). Move the perspective center to the upper right corner by pressing the decimal-point key on the keypad and then dragging the large crosshairs.
- » Position the perspective matrix in the middle of the page within the diagonal converging lines.

- Set the *y*-axis rotation to about 70 degrees (the Menu/Info bar display should read 0, 70, 0).
- Use the semicolon and apostrophe keys to move the brush toward or away from you until it fits within the lines. Click to paint.
- Return to the other screen and pick up the central part of the row of buildings, this time by the right-hand corner.
- Switch to the main picture, reenter Perspective, and, using the same angle of rotation, paint this brush to the left of the first brush so that the row extends to the left margin of the screen.

Let's put some buildings behind the row on the screen now. Without leaving perspective, turn on the stencil tool and lock all the colors except background white. Now you can slip a partial row behind the existing buildings. The result should look like Figure 11-5. Don't worry too much if the building angles and edges don't align perfectly—your eye expects complexity in a scene like this.

Also keep in mind that the rest of the picture will be in perspective as well—but you, not *Deluxe Paint II's* perspective tool, will have to supply the illusion of depth. Make sure any lines along the *z*-axis (that is, lines which travel from foreground to background) appear to recede toward the perspective center (the vanishing point) which you set above.

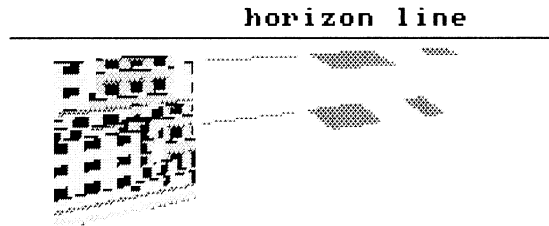
Figure 11-5. Buildings 5



Six

Add roofs and sides to the buildings. Roofs are easily made by drawing a short line (in brick red), picking it up as a brush, switching on the straight-line tool, and drawing a short polygon. See Figure 11-6. Note that the angle of the roof becomes more horizontal as you approach the horizon line.

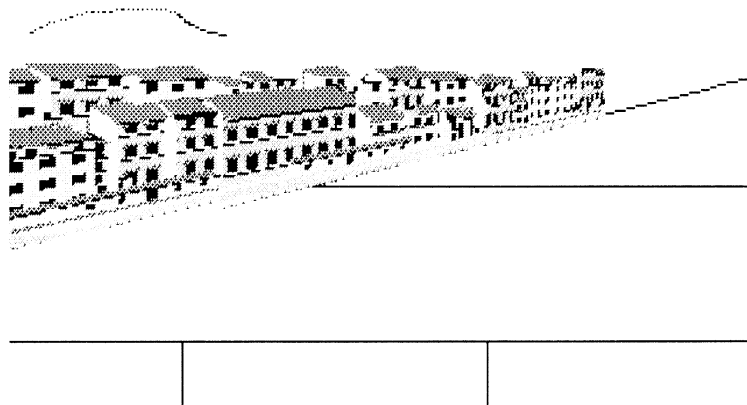
Figure 11-6. Roof Angles



Seven

Once the roofs are on, the buildings become more well-defined. Give them individuality and three-dimensionality by adding sides in white or very light cream (remember that the sun is coming from the upper left). Draw these sides with lines and small built-in brushes.

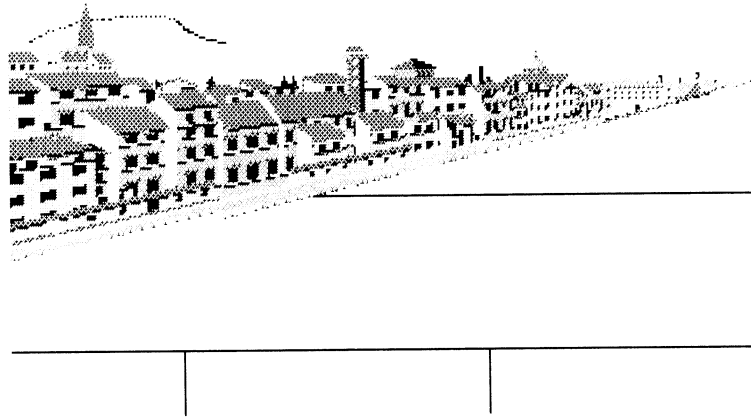
Figure 11-7. Adding Roofs and Sides



Eight

Landmarks are needed to make the cityscape uniquely Florentine. Add church spires, bell towers, and domes, sprinkle in chimneys and treetops, and extend the buildings to the vanishing point at the right margin of the page.

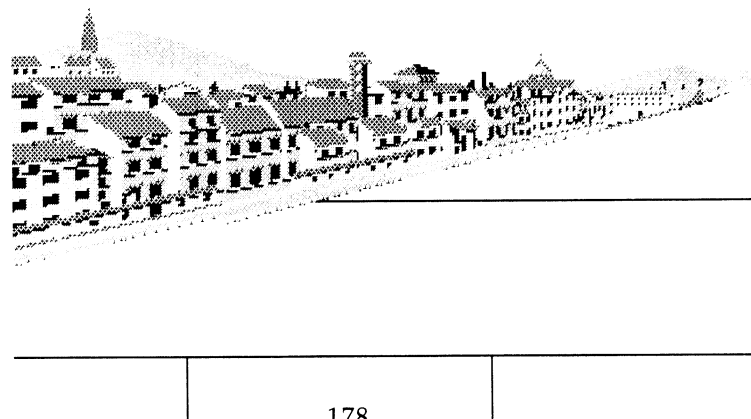
Figure 11-8. Landmarks



Nine

Paint in the hills in the background. Create a stencil of the building colors so what you've done so far won't be disturbed in this and the next step. Erase the old guideline for the hills and remodel it as shown. Use the Smear option to soften the shading on the right side of the hills.

Figure 11-9. Hills

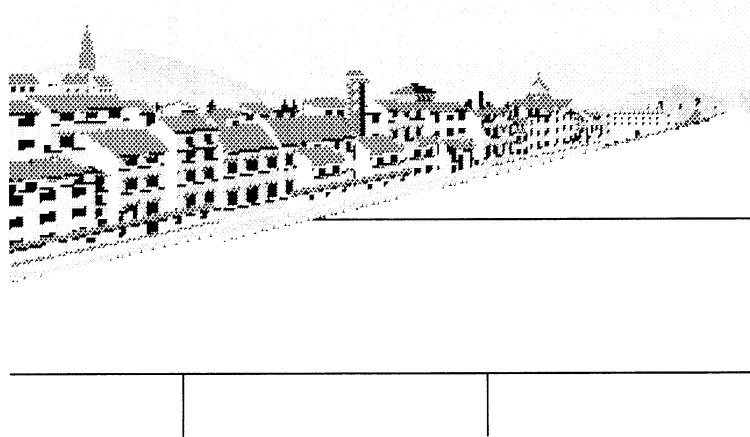


Ten

The sky can be added next. Create a range of sky blues (there are two in the suggested palette) and then fill the upper area of the picture with a blue horizontal gradient, shading from darker at the top to lighter at the horizon (the illustration doesn't show this). Be sure to set the gradient mix so that the color transition is spread over a wide area.

Or you can simply fill in the sky with a solid color, the lighter sky blue. Paint in the clouds with a round built-in brush and the dotted-line tool; then use Smear and Blend to fluff them up. Give them body with a little gray on the undersides.

Figure 11-10. Sky

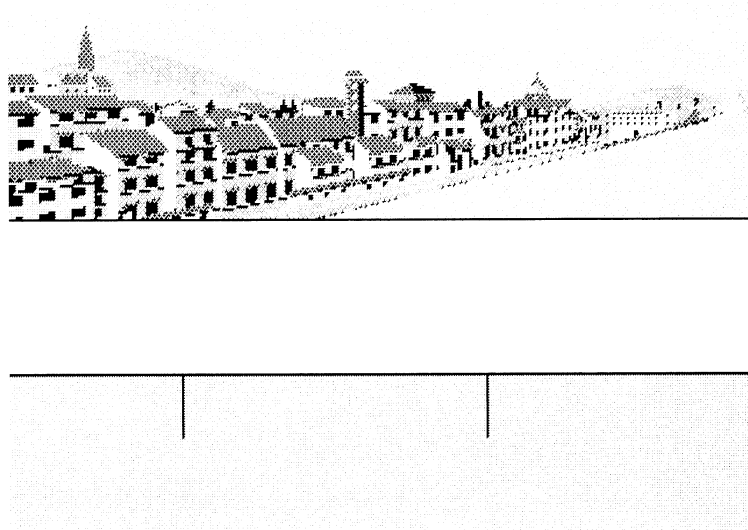


Eleven

Use the darker blue-greens to paint in the river. Use the solid-fill tool to add a darker shade at the bottom and a lighter shade at the top. You'll add detail to the water's surface later.

You can also block out the main bridge shape now, obscuring part of the row of buildings. First, however, turn off the stencil you made earlier.

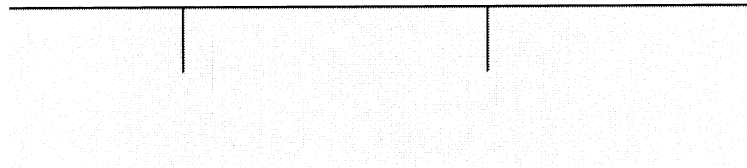
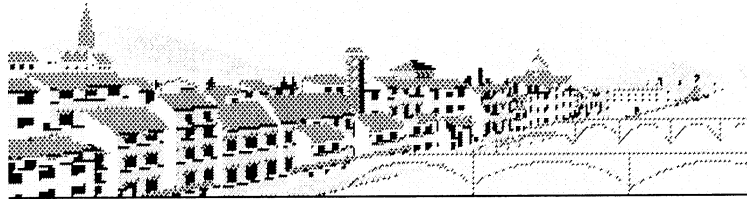
Figure 11-11. Water



Twelve

There are several other bridges over the Arno. Let's put them in now. First, position them with some scaffolding lines. Draw the arches with the curve tool.

Figure 11-12. Bridges 1

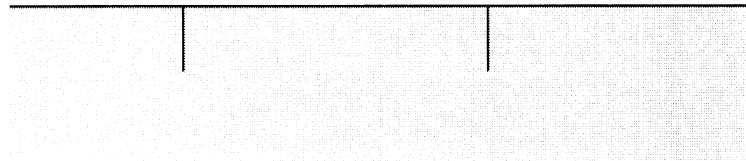
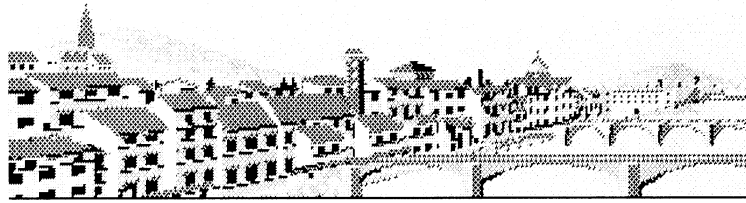


Thirteen

Use browns and gray to model the bridges. The more distant bridge should be generally lighter in color. Use Magnify to help you work on these small structures.

In the far distance, add another bridge using just lines.

Figure 11-13. Bridges 2



Fourteen

At last you can work on the Ponte Vècchio itself. First, create a pattern for the tiles on the roof of the bridge. Use black lines over brick red.

Draw a brick-red solid rectangle and then draw some horizontal and vertical lines over it. These should be roughly parallel, but a little ragged—not at all gridlike. Pick this up as a brush and shear it to about a 60-degree angle (shown at 2× magnification).

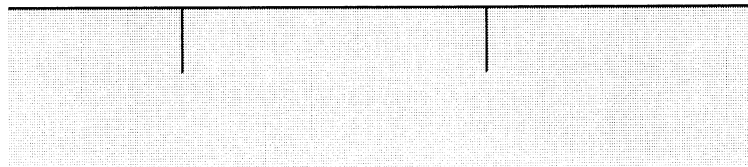
Figure 11-14. Roof Tile Pattern



Fifteen

Pick up a rectangular section of the pattern as a custom brush. Select Pattern Fill/From Brush from the Fill Type box. With the filled-rectangle tool, draw a long rectangle along the upper edge of the bridge area to create an instant tiled roof.

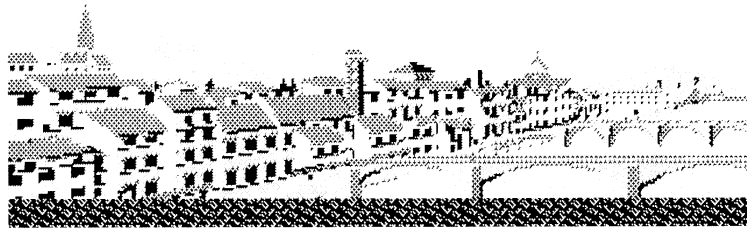
Figure 11-15. Ponte Vecchio Roof



Sixteen

Flesh out the bridge supports with solid rectangles and polygons.
Draw the arches with the curve tool.

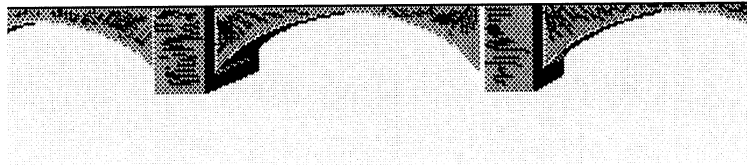
Figure 11-16. Ponte Vecchio Pillings 1



Seventeen

The finished pilings have lines on them to give the effect of stone blocks.

Figure 11-17. Ponte Vécchio Pilings 2



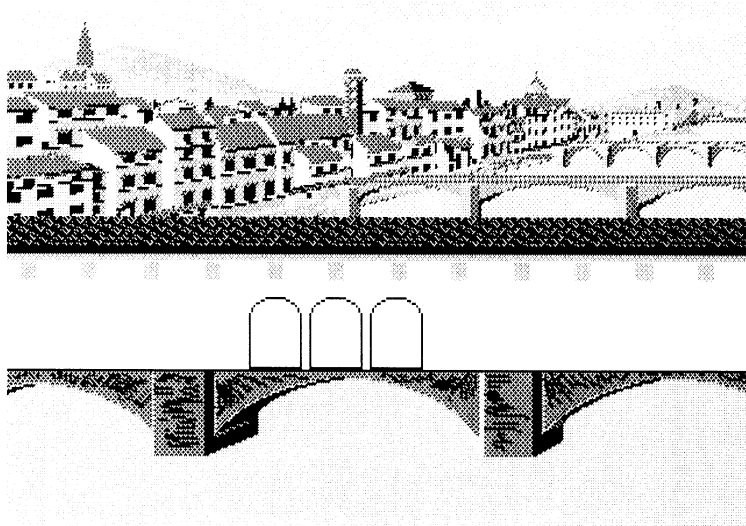
Eighteen

Now for the covered part of the bridge.

Add a shadow line just below the tiled roof with the straight-line tool. Use a thick line of black, then one of gray or brown. Smooth the lower edge of the shadow with a medium, square, built-in brush set to the Smooth mode.

Create an archway; then clone it twice with the custom-brush tool and position the three as shown. Paint in a row of windows just below the roofline; note that the windows are aligned with the middle of the archways.

Figure 11-18. Ponte Vécchio Façade 1

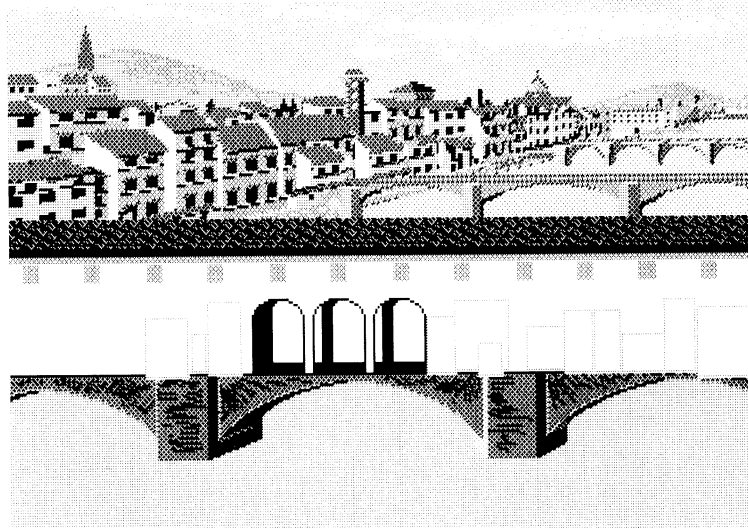


Nineteen

The archways are open, so you have to show the other side. Make a brush of the three arches and then add a temporary tint to the bridge face (gray is fine) with the solid-fill tool. Don't fill the inside of the arches. Make a stencil of all the colors except background white; then slip the arches brush behind the already painted ones as shown in the figure. Turn off the stencil, take away the temporary tint by filling with the background color, and fill the bridge interior with black.

At this time you can also start blocking in additional structures.

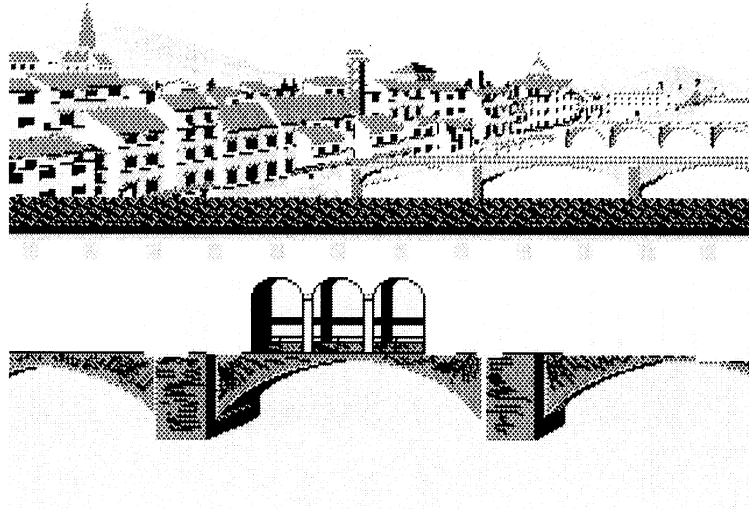
Figure 11-19. Ponte Vécchio Façade 2



Twenty

Additional work on the arches brings out detail in the walkway, railings, and pillars of the archway. Water can now be seen through the openings.

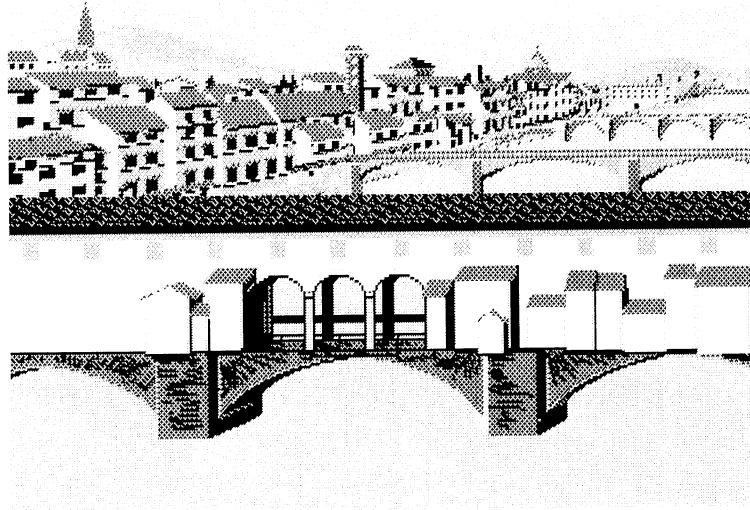
Figure 11-20. Ponte Vécchio Façade 3



Twenty-One

Paint in roofs and sides of the buildings on the bridge, just as you did with the riverbank buildings.

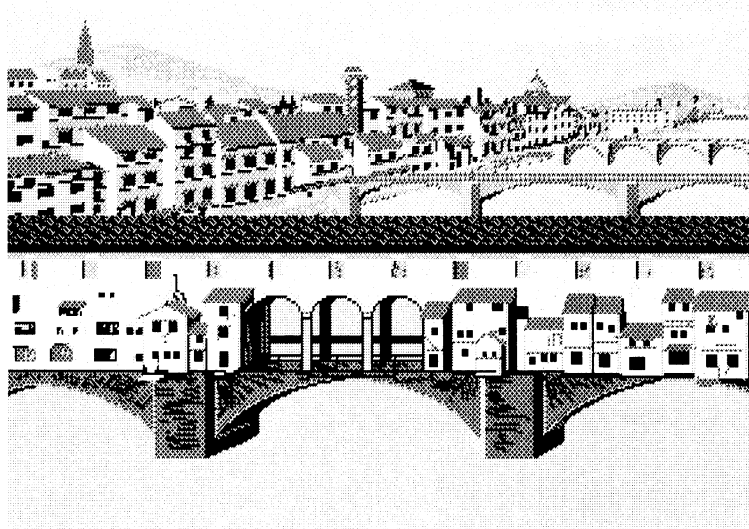
Figure 11-21. Ponte Vècchio Façade 4



Twenty-Two

Windows and fine details of shading complete the bridge. To add texture, lightly sprinkle it in a neutral color with the airbrush set to a one-pixel brush and a wide spray.

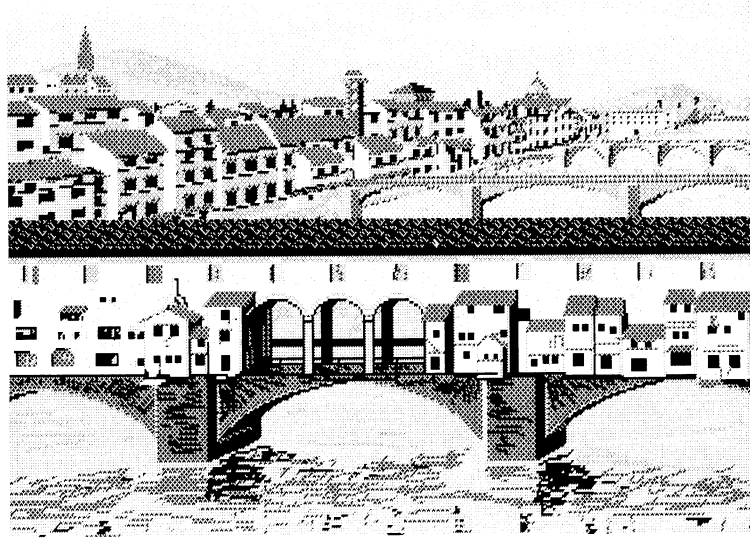
Figure 11-22. Ponte Vècchio Façade 5



Twenty-Three

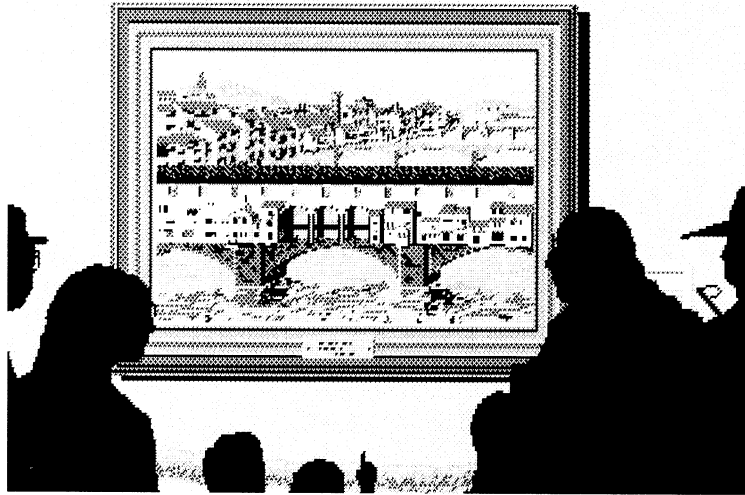
In the final step, add reflections and a rippled surface to the water. Quick sketching motions of the mouse with a one-pixel brush produce credible ripples and watery reflections. When working on reflections, include colors from the structure that's being reflected.

Figure 11-23. The Finished Ponte Vécchio



Of course, you needn't stop there. Frame your painting and put it in a salon, with any number of admirers.

Figure 11-24. In the Gallery



APPENDIX A

From New to Old

Using *Deluxe Paint II*

with Other Media



Once you've created your Deluxe II masterpiece, what can you do with it? Here are some tips and suggestions for translating *Deluxe Paint II* works into other visual media.

Printing

Perhaps the most obvious thing to do is to print your picture out on paper. Your computer can be connected to any of a large number of black-and-white and color printers that will do this on command. Boxes containing printing options and specifications for *Deluxe Paint II* picture files can be called from the Amiga's Picture menu and the IIGS's File menu. The options are fairly straightforward and are fully covered in the *Deluxe Paint II* manual. Consult your printer's instruction manual for more specific information on printing, recommended papers, and so on.

A detailed discussion of personal computer printers is beyond the scope of this book, but there are a few points to keep in mind. One is that no printer, black-and-white or color, can print an image that will equal in clarity and sharpness of detail the image you see on your monitor. This is especially true of currently available color printers. No color printer can exactly match the colors your computer can generate, although the inkjet and thermal-transfer types give the best color fidelity and saturation. The glossy surface of thermal printouts is particularly attractive. Dot-matrix color printers give relatively poor results and are not recommended.

If you are a professional artist (and even if you're not), you may be concerned with the type, quality, and longevity of the paper your image will be printed on. At present, no color printer gives good results when printing on a high-quality art paper like Arches or Rives. In fact, most of these papers are too thick and inflexible to even fit in the printer. No one knows much about the longevity and colorfastness of images printed on typical computer paper, which has at best a 25-percent rag content and is quite acidic. If this is a concern, try to find a non-acid paper with a high rag content and a smooth surface that will work with your printer.

You may need to contact the paper manufacturers directly for more information; a computer-supplies retailer is unlikely to be of much help. You also have the option with some printers of printing on acetate or mylar for transparencies. Both of these materials tend to yellow over time.

Once you've made your printout, you can use it in many other processes. Printouts can be drawn on and painted on by hand, collaged with other materials, embossed by running through an etching or woodcut press (make sure your paper is strong enough to hold together before you try it), cut, folded, and assembled to make sculptures, and pieced together with other printouts to create large multipanel works. You can even run the printout through the printer more than once and overprint multiple images.

Photography

Printouts can be made directly in photographic form, with greater clarity, resolution, and color fidelity than is possible with paper printing. There are two ways to do this.

Film printers. A film printer takes the video output from your computer and converts it directly to a finished slide or instant photograph of the screen image. Currently, film printers start at \$2,000 and go up from there. If you need to make lots of slides or film prints of your *Deluxe Paint II* work, however, it may be worth the investment.

Photographing the screen. If you can't afford a film printer but want photographs of your work, you can always photograph your monitor screen. Here are a few tips for taking successful screen shots.

- » For best results, use a 35mm single-lens reflex camera with a built-in light meter and manual shutter and aperture, a 70–100mm short telephoto lens, fast daylight color print or slide film, and a sturdy tripod.
- » Clean the monitor screen with a glass cleaner. Turn off the lights and mask the windows, or shoot at night.
- » Position the tripod and adjust the camera so that the center of the lens is level with the center of the display. The display should fill the camera's viewfinder. Remember to hide the menu and Info bars, the toolbox, and the crosshairs unless you want them to show in the shot.
- » Use shutter speeds of 1/8 and 1/15 seconds. Take several shots of each *Deluxe Paint II* picture at each speed. Use different aper-

tures as well, bracketing the suggested f-stop one-half stop above and below.

- » Many of the negatives or slides will be marred by a black band running across them (that's caused by the monitor). But at least one shot of each *Deluxe Paint II* picture should be clear and properly exposed.

The slides or photographs can then be used in photographic reproduction, photoetching and photolithography, in slide shows, for posters, and so on. Painters can project a slide or transparency of a *Deluxe Paint II* image onto canvas to use as a guide for painting.

Video

VCRs. Your computer outputs a composite video signal that can be recorded on any VCR. Transferring your *Deluxe Paint II* images to tape is simple, and since there are many more VCRs than Amigas or Apple IIGs, it's a good way to carry your work around for display.

When recording video, it's worth using the best VCR you can find. There are several VCR formats; in general, the wider the tape, the higher the image quality. The one-inch format is the highest quality, but is only available in television studios and high-priced video production houses. The three-quarter-inch format is more affordable and available and is a good choice for work that will be broadcast or shown to industrial clients. The half-inch Betamax and VHS formats and the new 8mm format are not quite professional quality, but are fine for home use. Always buy the best videotape stock you can afford—the top-grade stock in each format is usually labeled “professional grade.”

Video Animation. Many three-quarter-inch and some of the new 8mm VCRs offer a feature called *single-frame recording*. This lets you record one clean frame of video every 1/30 second. With a single-frame VCR, your computer, and *Deluxe Paint II*, you can create high-quality computer animations. In a process akin to the cel animation system used by film animators, you draw a series of pictures, each incrementally different from the one before, and record them frame by frame, in sequence, on the VCR. When the tape is played back, the pictures run together, creating the illusion of motion.

Techniques for desktop frame-by-frame animation with paint programs like *Deluxe Paint II* are still relatively undeveloped. Here are a few things to keep in mind.

- » Frame-by-frame animation is hard work. You'll need to record at least 12 different pictures per second, the minimum needed to maintain the illusion of smooth motion. In a three-minute animation sequence, that's 2160 pictures. Start with very short pieces and build up to longer works as you gain experience.
- » Storyboard your work. Sketch out the plot and work out details of the background and character motions before you begin making the actual art for animation. Fine-tuning your concept before you start will save you time and frustration later.
- » Create, store, and move backgrounds and brushes separately. To move an object across a background, load and lock the background; then load a brush and stamp it down in its first position. Record one frame, then pick up the brush, move it slightly in the direction you want to go, record another frame, and so on.
- » Remember to switch off the menu and Info bars, toolbox, and crosshairs, or they'll record too. If you're using the Amiga version, use a full video page to eliminate the black border around the standard page.
- » You need to redraw only the parts of a brush or background that move. For example, a walking figure needs only four or five positions for each arm and leg. Draw these positions as separate brushes and tack them onto a brush of the body. After you've created the various stages of the walking figure, save each stage as a brush and load them in sequence, repeating the cycle as often as necessary to get the figure from one point to another.
- » Backgrounds can be larger than the screen. An oversize page can be scrolled to reveal new areas. With careful attention to the position of your brushes (use the coordinates for exact placement) you can even move the background while your brushes appear to be stationary.
- » You can change palettes in a frame-by-frame animation sequence as often as you like—even in every frame. Remember that your brushes may reflect any palette changes.

Video Digitizers and Genlockers. Video images can be fed into your computer as well as output from it. Video digitizers, hardware/software systems designed for this purpose, let you take an individual frame from a video camera or a VCR and store it in the *Deluxe Paint II* file format. Thus, you can point your video camera at anything and incorporate an image of it into your *Deluxe Paint II* pictures. A digitizer is particularly useful for creating realistic backgrounds for frame-by-frame animation.

A genlocker is a piece of hardware that makes it possible for computer graphics to be superimposed over another video source,

such as the output of a camera or a VCR. Video is fed through the genlocker into the computer, where it is overlaid with graphics, text, or animation. The combined output can then be recorded on a VCR or routed to another video device. Commodore markets an inexpensive (\$300) genlocker for use with the Amiga. With the Amiga genlocker you can, for example, use *Deluxe Paint II* to add titles to your home videos or overlay wild graphics on an old copy of *Casablanca*.

A Final Suggestion

No matter how you use your *Deluxe Paint II* pictures, they look best on your computer's monitor and are most easily stored on disk. As computer art becomes more widespread, art which exists only for display on a computer will become more common as well. You may choose to ignore traditional media entirely and distribute your work on disk. If you want to donate your work to the public domain, you can add your disks to the public domain collections, or post your art on bulletin board systems.



APPENDIX B

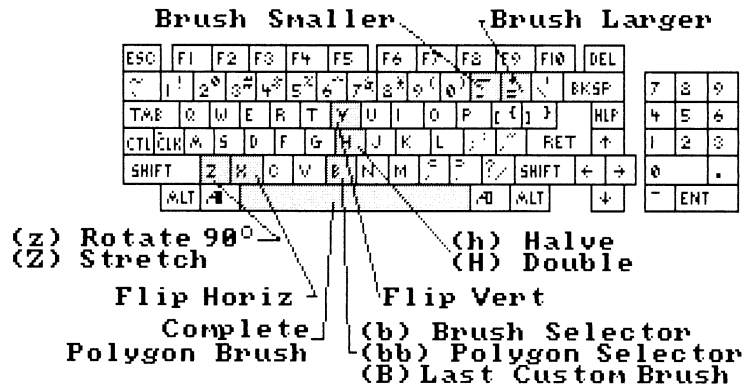
Deluxe Paint II

Keyboard
Command
Equivalents

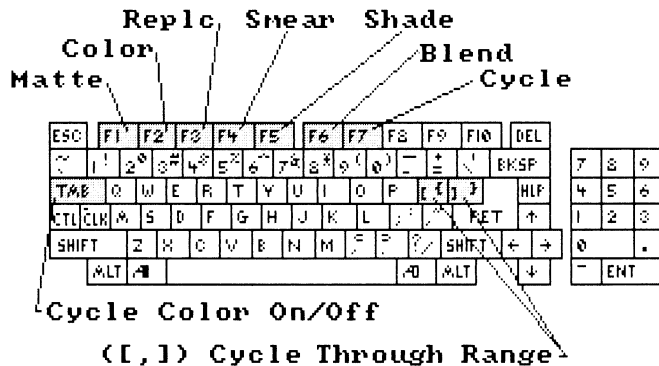


APPENDIX B

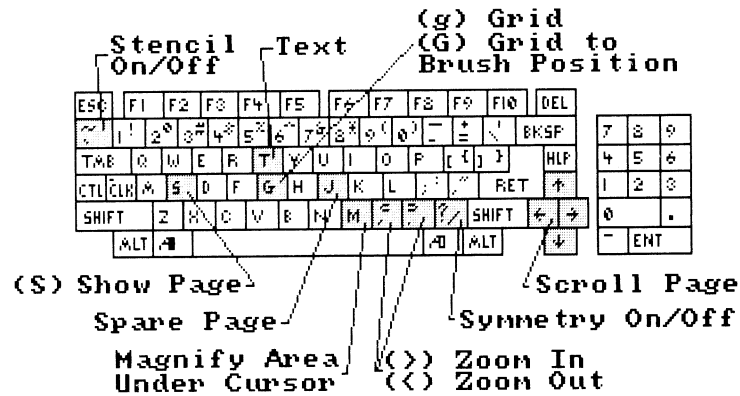
Amiga Brush Keyboard Equivalents



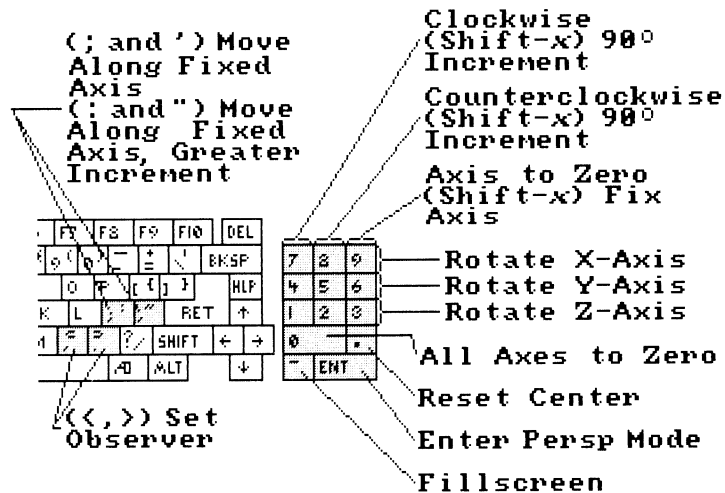
Amiga Painting Modes Keyboard Equivalents



Amiga Drawing and Painting Aids Keyboard Equivalents

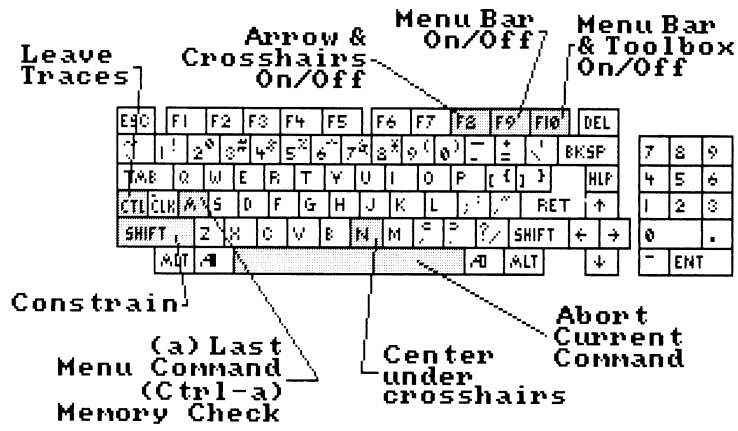


Amiga Perspective Keyboard Equivalents



APPENDIX B

Other Amiga Keyboard Equivalentents



Apple IIGS

Apple IIGS Basic Drawing Tools Keyboard Command Equivalents

(r) Outline Rectangle
(R) Filled Rectangle
(e) Outline Ellipse
(E) Filled Ellipse

Undo
(K) Clear Palette

Curve

ESC	1	2	3	4	5	6	7	8	9	0	-	=	DEL	CLR	=	/	*
TAB	Q	W	E	R	T	Y	U	I	O	P	[]		7	8	9	+
CTRL	A	S	D	F	G	H	J	K	L	;	'	RET		4	5	6	-
SHIFT	Z	X	C	V	B	N	M	,	.	?	SHIFT			1	2	3	ENT
CLR/OPT	G	~	~											0		.	T

(s) Dotted Line
(d) Freehand Line
(D) Freehand Line, 1-Pix Brush
(c) Outline Circle
(C) Filled Circle

Dotted Line, 1-Pix Brush
Color Settings
(f) Fill
(F) Fill Box
Straight Line

Apple IIGS Brush Keyboard Command Equivalents

(h) Halve
(H) Double

Flip Vert
(Y) Double Vert

ESC	1	2	3	4	5	6	7	8	9	0	-	=	DEL	CLR	=	/	*
TAB	Q	W	E	R	T	Y	U	I	O	P	[]		7	8	9	+
CTRL	A	S	D	F	G	H	J	K	L	;	'	RET		4	5	6	-
SHIFT	Z	X	C	V	B	N	M	,	.	?	SHIFT			1	2	3	ENT
CLR/OPT	G	~	~											0		.	T

(z) Rotate 90°
(Z) Stretch

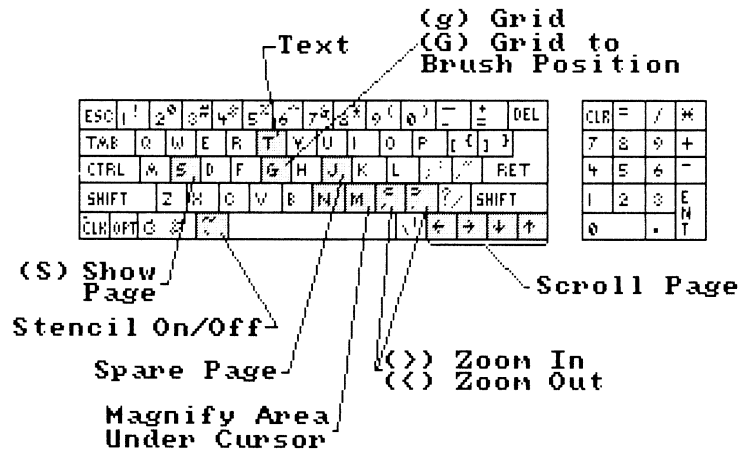
Flip Horiz
(X) Double Horiz

(b) Brush Selector
(bb) Polygon Selector
(B) Last Custom Brush

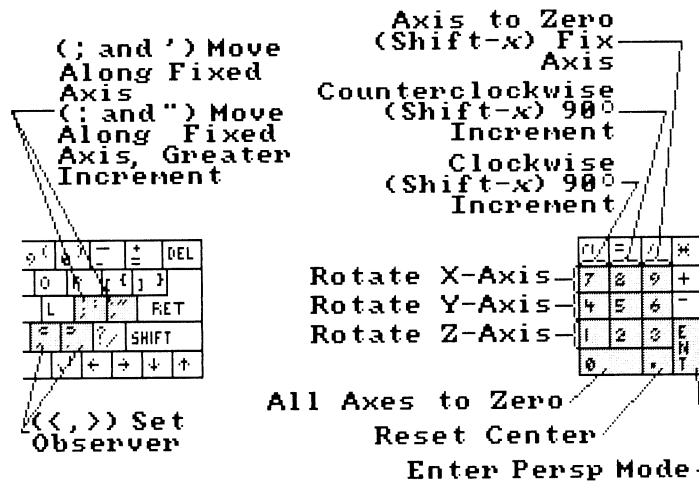
Complete Polygon Brush

APPENDIX B

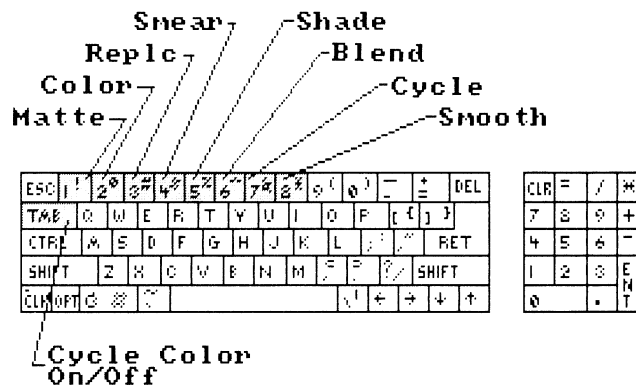
Apple II Drawing and Painting Keyboard Command Equivalents



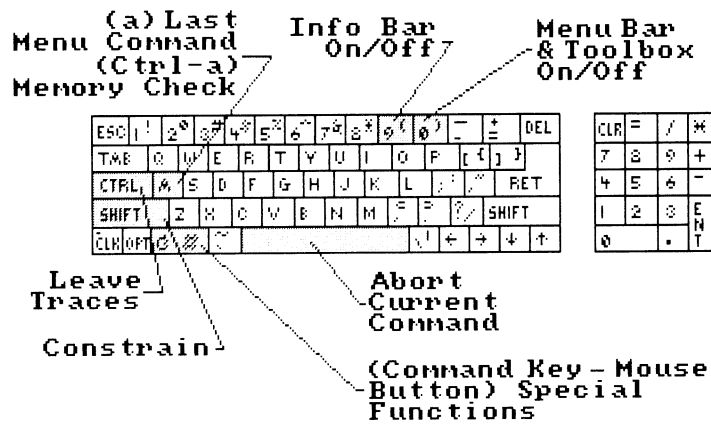
Apple II Perspective Keyboard Command Equivalents



Apple II Painting Keyboard Command Equivalents



Other Apple IIs Keyboard Command Equivalents



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Becoming a *Deluxe Paint II* Artist

Art for the masses. That's the promise of graphically powerful computers like the Commodore Amiga and Apple IIGs.

But computer art goes nowhere without sophisticated software and the means to use it. *Deluxe Paint II* is the software—the premiere graphics package for the Amiga and IIGs. And this book, *Using Deluxe Paint II*, is your comprehensive tutorial and guide to the software and to artistic excellence on a computer.

Using Deluxe Paint II shows you how to create the most impressive art and graphics possible. For amateur and professional artists alike, this book offers hands-on experience and scores of ideas.

With *Using Deluxe Paint II*, you'll learn how to:

- Manage the basics of drawing, sketching, and painting with *Deluxe Paint II*.
- Use one of the program's most powerful features—custom brushes—to paint as you've never painted before.
- Create your own palette from 4096 color choices.
- Produce professional graphics for illustration, design, and advertising.
- Draw in perfect perspective.
- Combine computer art and video for astounding effects.
- And much, much more.

You'll see techniques explained and demonstrated, and the results shown in more than 100 figures, paintings, and drawings. You'll learn all about this new artistic medium for the first time, and then return to *Using Deluxe Paint II* for advice and reference as you develop your skills.

Using Deluxe Paint II is the door to a new world of art. Open it and become a *Deluxe Paint II* artist.