

PART i
**AN INTRODUCTION
TO PHOTOSHOP 6**

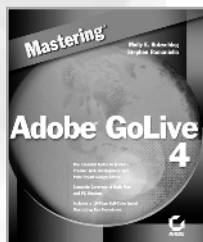


Chapter 1

INTRODUCING GRAPHICS

Just as word-processing software has changed the mechanics of writing, so graphics software has changed the nature of drawing and design. Effects that were previously extremely labor-intensive and costly to produce are now quite easily performed by anyone with rudimentary design skills, a vivid imagination, and tools like Adobe Photoshop.

Today, Photoshop has become an essential tool in many industries. In the print shop, Photoshop is part of the complex process of making color separations. In the photography studio, it is the primary color-correction and photo-retouching tool in use. In the design studio, it is essential for producing illustrations. Engineers, architects, urban planners, video technicians, cinematographers, multimedia publishers, medical illustrators, and Web designers all benefit from Photoshop's power and versatility.



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4 Chapter 1

GRAPHICS PAST AND PRESENT

Look at an old *LIFE* magazine from the 1930s or 1940s; the photographs are almost all black and white and often lack the slick precision of today's magazine photos. You'll see watercolors and pen-and-ink illustrations. This handmade look is not at all like the in-your-face hyperreality of today's illustrations. Layouts of old were also less dynamic and more predictable. If a space alien saw an old copy of *LIFE* and assumed that it was representative of our culture, it could draw the conclusion that we humans are color-blind! Of course, before Kodachrome and other color films became widely used, black-and-white images were the norm because that was all we had to use.

Although older publications have an undeniable charm and beauty that is distinctive to their era, their esthetic appearance is a result of the available technology of the day. Magazine publishers of the 30s and 40s did all of their "imaging" manually with airbrush, paint, pen and ink, or optically with a camera.

Special effects, known back then as "trick photography," were performed by the photographer in the camera, using special setups or double exposures. Or they were produced in the darkroom with enlarger tricks, special development techniques, and cleverly manipulated stacks of film. More recently, we have experienced a revolution in image technology, in which the evolution of an image does not stop with the camera, darkroom, or retoucher's brush. Tools like Photoshop can move the Eiffel Tower to Times Square, or provide a tabloid newspaper with photos of a long-dead rock star pumping gas at a convenience store. Because images can be transformed so easily today, we have not only changed the way we perform our imaging tasks but also altered the way we *perceive* images. We no longer believe something is real or true simply because we are shown a picture of it.

Images can also be given much wider distribution than they were 60 years ago. The Web is the one of the primary sources of images today, reaching places that even *LIFE* magazine could not. Images are more easily published and accessed than ever before. In fact, we could say that this is an era of self-publication. With universal access to this powerful medium, any individual can put their message into cyberspace—and reach millions by doing so.



IMAGING TECHNIQUE AND TECHNOLOGY

There is very little expertise required to publish a basic Web page, and the results can be either charming or problematic. The Web has affected the quality of how we present ourselves to the world. Without the tools and techniques necessary to create, edit, and optimize graphics, many individuals publish—despite the best of intentions—Web sites that are neither technologically optimized nor visually efficient. Anyone who wants to create good-looking sites has to learn professional graphic techniques.

The integration of illustration and imaging software into Web technologies will expand the capabilities of the designer and publisher. Images and graphics are fundamental to the success of communicating the message. If a Web designer or publisher has the ability to control the content of the images on the Web, how they appear, and how quickly they load, this will greatly enhance the credibility of their page.

VECTOR VERSUS RASTER ART

There are two types of static art (as opposed to animations and motion pictures) that can be created on a computer: *vector*, or line art and *raster*, or pixel-based art. Each art type has a distinctive look, feel, and working procedure. Web designers who have expanded their capabilities to include a basic hands-on knowledge of the different software that produce this kind of art have an arsenal of tools that can produce almost any graphic element imaginable.

Vector Art

Vector graphics consist solely of lines and curves that are created mathematically such that each plotted point in the illustration relates to quantity and direction at the same time. If you create a vector graphic and save it for future editing in vector format (the native format of a vector program, such as Adobe Illustrator), you can re-open and modify that file in terms of quantity and direction. Within the vector application, you can make a vector graphic larger and smaller without losing quality because

6 Chapter 1

you are simply altering the math involved. Photoshop creates vector graphics in limited ways when you use the Pen tool to create a path, the Type tool to create text, the Line tool to create straight lines, or the Shape tool to create closed shapes. These vector objects are converted to pixels when you are done working on a Photoshop image.

Vector art is composed of Bézier curves, which define shapes or objects. Bézier curves were first introduced to the European automobile industry in the 1960s for the purpose of maintaining the integrity of drawings during the design process. Eventually, computer-aided drafting and design (CAD or CADD) software, running on workstations that could cost a million dollars or more, brought the ability to produce drawings that could be electronically edited and scaled to engineers and designers who had been tediously working with manual drawings, overlays, and pin registration systems.

The mainstream drawing programs for computers were pixel-based. These programs produced results with stair-stepped pixelated lines and shapes, a phenomenon known as the *jaggies*. Adobe Illustrator, which was released in 1988, was the first computer illustration program to become available to the general public. Its effect on the drawing process for published art work was revolutionary. It empowered the artist to draw hard-edged graphics on a computer. When printed, these graphics were composed of clean, sharp lines and edges.

This was particularly valuable for illustrators but also for typographers because type fonts can be rendered using the same technology. At this point in history, the personal computer's status graduated from being merely an amusing and expensive sketch pad to a full-fledged, production-oriented design tool.

Vector-based illustration software (such as Adobe Illustrator, Macromedia Freehand, Corel Draw, or page layout programs that can generate Bézier curves) are sometimes referred to as *object-oriented* software. When you draw Bézier curves with these programs, you are creating *vector objects* that define lines, space, shape, and color by creating Postscript code. Figure 1.1 shows the Postscript code used to create the stapler illustration. These programs are a good complement to programs like Photoshop, which work with pixels and have only limited vector-oriented features. Indeed, many graphics professionals use a combination of the two types of programs to achieve the looks they want. You'll find a more complete comparison between Photoshop and programs like Illustrator in Chapter 12.



```
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%%Creator: Adobe Illustrator(R) 8.0
%%AI8_CreatorVersion: 8
%%For: (Steve W Romaniello) (GlobalEye)
%%Title: (stapler)
%%CreationDate: (1/17/99) (1:02 AM)
%%BoundingBox: 30 30 582 392
%%HiResBoundingBox: 30 30 1299 581.9395 391.5
%%DocumentProcessColors: Black
%%DocumentSuppliedResources: procset Adobe_Level2_AI51.2 0
%%+ procset Adobe_screens_AI51.0 0
%%+ procset AGM_Gradient 1.0 0
%%+ procset Adobe_ColorImage_AI61.3 0
%%+ procset Adobe_Illustrator_AI51.3 0
%%+ procset Adobe_cshow2.0 8
%%+ procset Adobe_shading_AI81.0 0
%AI5_FileFormat 4 0
%AI3_ColorUsage: Black&White
%AI7_ImageSettings: 0
%%CMYKCustomColor: 1 0 0.55 0 (Aqua)
%%+ 1 0.5 0 0 (Blue)
%%+ 0.5 0.4 0.3 0 (Blue Gray)
%%+ 0.8 0.05 0 0 (Blue Sky)
%%+ 0.5 0.85 1 0 (Brown)
%%+ 1 0.9 0.1 0 (Dark Blue)
%%+ 1 0.55 1 0 (Forest Green)
%%+ 0.05 0.2 0.95 0 (Gold)
%%+ 0.75 0.05 1 0 (Grass Green)
%%+ 0 0.45 1 0 (Orange)
```

FIGURE 1.1: Postscript code for the stapler illustration

Inside the Postscript-compatible printer is a device called a *Raster Image Processor* (RIP). The RIP interprets the code into a bitmap, which the printer's marking engine uses as a guide to print the image.



NOTE

The advantage of a vector image over a raster image is that vector art is entirely resolution independent. Vector art can be made larger or smaller with no degradation to the integrity of the design. An image can also be printed at any size at the maximum resolution of the printer without becoming pixelated.

A Bézier curve (see Figure 1.2) is composed of several elements, including two anchor points, one segment, two direction lines, and two direction handles. Continuous paths may share an anchor point. Direction lines define the direction of a curve; therefore, straight paths or sharp corners do not have them.

Object-oriented software extends your capability to produce high-impact color graphics that are appropriate for many Web sites. Vector software is especially good for the creation of logos, charts, maps, cartoons (see Figure 1.3), highly detailed technical illustrations, and images that require hard-edges, smooth blends, and dazzling colors. Vector software is also perfect for the creation of some kinds of special text effects and graph art.

8 Chapter 1

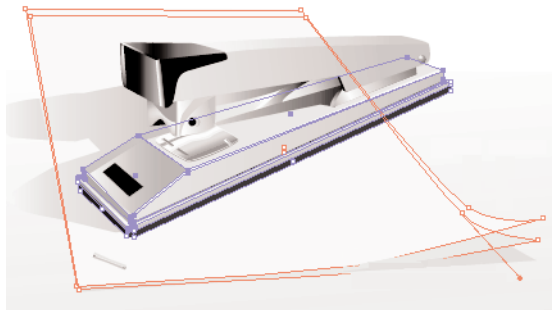


FIGURE 1.2: A Bézier curve



FIGURE 1.3: Max Cannon's Red Meat cartoon is created in a vector program.

Actually, vector art never appears on the Web in its original form. With the exception of Adobe Acrobat Portable Document Files (PDF) and images displayed on the Web using helper applications like Macromedia Flash, all images that appear on the Web are pixel-based raster images, like those produced in Photoshop. For a vector graphic to appear on the

Web, it must first be converted by saving or exporting it to a Web-compatible format, such as JPEG or GIF (see Chapter 18).

An image that is created in Illustrator can be exported as a GIF or saved as a JPEG format directly. It can also be saved as an Illustrator EPS file and opened in Photoshop for image enhancement and the addition of special effects. The image will automatically be *rasterized* (see Figure 1.4). This means its vector information will be converted into pixels once the file leaves the vector environment.

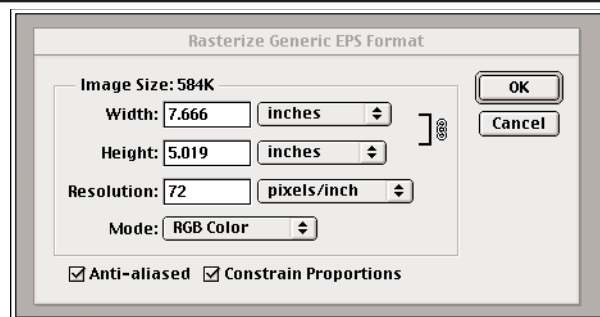


FIGURE 1.4: A Raster window

Raster Art

Raster graphics are *bitmapped* files. You're probably familiar with these. They include TIFs, BMPs, GIFs, and JPEGs.

You can compare raster art to a grid. A grid is like a map of bits. Color and other information is placed in each of the little squares within the grid, fixing it in a specific place. In the same way, the information in raster graphics is fixed in quantity and direction. For that reason, raster graphics are larger and harder to modify than vector art, which uses complex mathematical statements to store its information. Because of its grid-like structure, you can make raster graphics smaller without losing too much quality; but when you make them larger, you force each bit to stretch out, resulting in blurry, blotchy graphics.

Raster programs use bitmaps, which are simply a mosaic of pixels. *Pixels* are the basic physical unit of a digital image. They are individual tiles of colored light that are set up on a grid and create an image, as shown here. The pixels are so small that when the eye sees them, it

10 Chapter 1

blends them together and creates a photographic image. The pixels can be selected and edited with a variety of tools and operations in Adobe Photoshop.



CALIBRATING YOUR MONITOR

A calibrated monitor improves your ability to produce images appropriate for all color settings in imaging or illustration software. Calibration will ultimately assure consistency during each work session and will ensure more predictable on-screen results.

Mechanical calibration devices are available. While they are more accurate, they are also fairly cost prohibitive for most people, ranging from \$600–\$1,200. Adobe bundles Gamma software with Photoshop. Gamma is a measurement of the midtone contrast of a monitor, and Adobe Gamma will help you calibrate your monitor to achieve smooth results.

Adobe Gamma software is automatically loaded into the Control Panel on Macintosh and Windows systems when Photoshop is installed. Before calibrating the monitor, you should let it warm up for at least 30 minutes. Set the ambient light in the room to the level that you use under normal working conditions. Change the background color on your screen to neutral gray for best results.

The Gamma Wizard walks you through calibration step by step. It explains how to control brightness, contrast, gamma, white point, and black point. To start calibrating your monitor, follow these steps:

1. Start the Gamma Wizard (see Figure 1.5).
2. Click the Step By Step Wizard radio button, and then click Next.
3. Click the Load button.
4. In Open Monitor Profile, select Adobe Monitor.
5. Select Next and follow the wizard's instructions to adjust the brightness and contrast of your monitor.

6. At the final window, you can compare results. Once you are satisfied, save the profile.

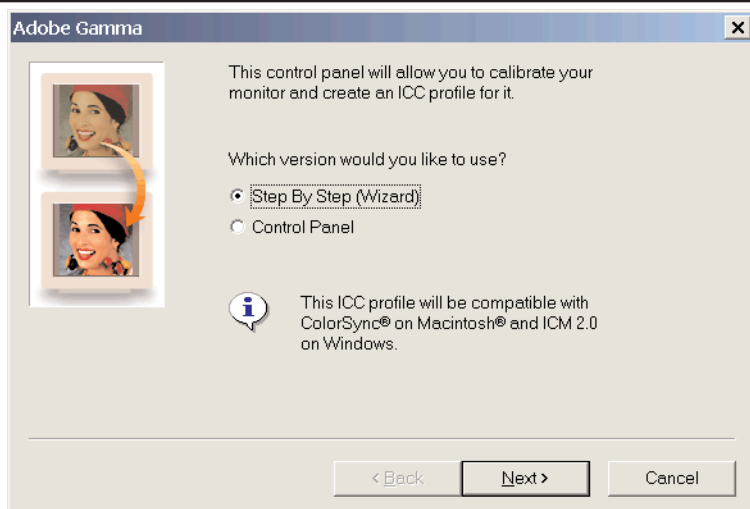
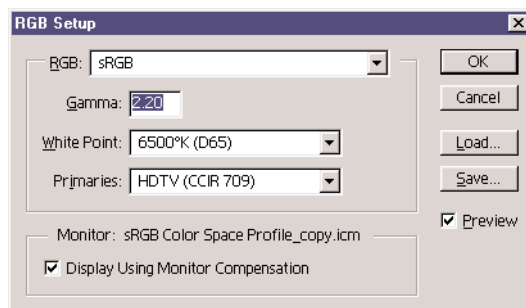


FIGURE 1.5: The Adobe Gamma Wizard

Choosing the Right Color Space

The next step in calibration is to choose an RGB space in which to edit images. Photoshop 6 lets you work in RGB spaces other than those defined by your monitor. You need to choose the one that best simulates the environment in which you intend to use your image. For the Web, for instance this will be the sRGB option. To choose an RGB space, follow these steps:

1. In Photoshop 6, Choose File > Color Settings > RGB Setup. The RGB Setup dialog appears.



12 Chapter 1

2. In the Working Spaces area, make sure that the sRGB choice is selected from the drop-down list.
3. Click OK.



NOTE

In Photoshop, Adobe made the sRGB color space its RGB color space default. This attests to the popularity of the Photoshop as a Web-design tool. sRGB is designed to simulate the display of an inexpensive VGA monitor in a Microsoft Windows environment. The assumption is that most people who use the Internet are not graphics professionals and do not use high-end computer monitors. When you work on an image for the Web, you should see it as Web surfers will see it so you can make color corrections accordingly.

WHAT'S NEXT

The next chapter will introduce you to the key features of Photoshop 6, including the basic tools and palettes. You'll also learn how to set up your preferences so Photoshop works exactly the way you want it to.

