PhotoPlus 8.0 Companion

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Welcome

Introduction

Welcome to Serif PhotoPlus 8.0—absolutely the best value in image creation and editing software for any home, school, organization, or growing business. PhotoPlus is your number one choice for working with photographs and paint-type images, whether for the Web, multimedia, or the printed page.

PhotoPlus has the features you'll need... from importing or creating pictures and animations, through manipulating colors and effects all the way to final export. Built-in support for TWAIN scanners and cameras makes it easy to bring in your own photos, while comprehensive import filters let you open just about any standard bitmap image.

Once you've got your image into PhotoPlus, you can enhance and alter its on-screen appearance with a diverse toolkit of functions and effects. A full range of export options (with special attention to Web graphics), plus powerful optimization capabilities, round out this high-performing package.

About the Companion

This Companion is your guide to getting started and getting results with PhotoPlus—from the basics to advanced techniques. The chapter sequence begins with basic concepts and proceeds gradually through various tools and features. Hands-on Projects are integrated each step of the way. We hope you'll take your time and enjoy the learning process. Here's a quick summary of chapter contents:

1 **Welcome.** There, we've said it again!

2 **Getting Started.** Will have you up and running in no time with an overview of key concepts and the PhotoPlus interface.

3 **Manipulating Images.** A rundown of basic techniques for selecting and operating on all or just part of an image.

4 **Working with Paint, Shapes, and Text.** How to proceed from the proverbial blank slate, using the PhotoPlus creation tools.

5 **Using Layers and Masks.** Understanding and mastering the creative possibilities of these more advanced features.

6 **Preparing Web Graphics.** A review of Web image formats and step-by-step guidance on animation and image preparation.

7 **Color and Output Options.** Combines essential background material and terminology with helpful tips to improve your images.

What's New in PhotoPlus 8.0

Whether you're a new or returning PhotoPlus user, you're sure to appreciate all the advances that keep it right on the cutting edge of value and performance:

♦   **Astounding 3D Lighting and Surface Effects**
Advanced algorithms bring flat shapes to life! Vary surface and source **light properties**. Start with a pattern or a function, adjust parameters for incredible **surface contours, textures, fills**. Optimized for Intel® Pentium® 4 processors.

♦   **3D Painting using Depth Maps**
Add **instant dimensionality** to your artwork. Painting or erasing on a layer's depth map appears as raised or lowered strokes on the image! Use with 3D layer effects to achieve "carved" side-view textures.

♦   **Instant Effects Gallery**
Puts our 3D technology and layer effects at your disposal, with no learning curve—simply choose a surface texture, pattern, glow, or bevel—then customize as you wish. Add your own categories and effects!

♦   **Instant Artist Painting Effects**
Customizable, automatic effects that turn your photos into **works of art**. Choose any style (Expressionist, Impressionist, Pointillist) or medium (Oil, Pencil, Paint and Ink, Watercolor), then dial up the effect you want!

♦   **Universal Gradient Fill Editing**
One **master dialog** allows editing of five fill types, now combining both color and transparency. Choose from a built-in gallery of presets, add your own categories and fills. Works with all PhotoPlus tools and effects that employ gradient fills!

♦   **Freehand and Bézier Curve and Shape Drawing**
Powerful **vector-drawing tools** let you produce any shape under the sun with controllable, connectable, editable line segments.

♦   **Combinatorial Shapes**
Now create multiple shapes on a single layer! For each additional shape, you can add, subtract, intersect, or exclude with previous shapes for **frames, cutouts and custom contours**.

♦ **Enhanced Selection Modes**
Lots of news here! **Paint to Select** mode lets you literally "brush on" selectedness. Border, Threshold, and Smooth commands for more versatility. Store and load selections between any open file. Use **combination buttons** (as for shapes) to define cutout selection regions. Convert selections into paths or layers.

♦ **Paths**
Use the full range of line- and shape-drawing tools to create editable outlines via the new **Paths tab**. Convert paths to or from selections on any layer. "Stroke" paths using any brush to create bordered shapes!

♦ **More Powerful Masking**
Masks now work on shape and text layers, too! Plus they now move independently of their layers and store their own colors. Extra convenience with mask preview thumbnails and key-assisted mode-switching, and much more.

♦ **UI Improvements**
New Layers tab buttons for most-used operations, plus preview thumbnails for masks and depth maps. Zoom to a region. View a shaded exclusion zone when cropping. A redesigned Export Optimizer. New **Layout Guides**, plus optional Snapping to grid or guides for finer control when painting or erasing.

♦ **Extended Import Capabilities**
Support for Paint Shop Pro® 7 (.PSP) files including layer information! And import Paint Shop Pro (.TUB) picture tubes to use as PhotoPlus Picture Brushes!

♦ **...And More!**
Quickly align shapes or text between multiple linked layers. Smart Resize means more efficiency, less loss. The Deform Mesh tool for reshaping any freeform region. New filters like Intelligent Blur, Maximum, and Minimum... All filters rewritten for improvements across the board!

Special Note: If you've upgraded to PhotoPlus 8.0 and want a quick-start preview of what's new and different, check out the "New Features" tutorial on the PhotoPlus 8.0 Resource CD-ROM!

Plus These Established Features...

PhotoPlus brought professional image editing to everyone—with features like these:

♦ **Editable QuickShapes**
Easy to create, easy to change! Simply drag sliders to morph chevrons, hearts, badges, teardrops, moons, zigzags, and many more... apply layer effects and gradient fills... and edit any shape at any time.

♦ **Browse Image Files and Folders**
The built-in Image Browser rapidly displays image thumbnails— a folder at a time—so you can preview clip art or saved work and inspect file details in a convenient, Explorer-style interface.

♦ **Unique Selection Options**
PhotoPlus goes well beyond the basic rectangle and lasso tools, adding more than a dozen completely customizable selection shapes like polygons, spirals, and stars. Use Magnetic Selection to find edges as you trace them. Or define a selection shaped like text— using any font and style! Advanced options let you fine-tune the selection and its properties for smoother blends and precise effects.

♦ **Stamp and Spray**
Use Picture Brushes to lay down colorful arrays of single or multiple mini-images: realistic machine cogs, colorful tubes, falling leaves, flowers, jelly beans, jewels, raindrops, marbles, planets, and more...

♦ **Powerful Image Export Optimizer**
The Export Optimizer lets you see how your image will look (and how much space it will take up) *before* you save it! Its multi-window display provides side-by-side WYSIWYG previews of image quality at various output settings, so you can make the best choice every time.

♦ **Web Animation Tools**
Iit's easy and fun to create or edit animations for the Web. You can import and export animated GIFs, apply special effects, even let PhotoPlus create entire animations for you automatically. Or export to the .AVI format for movies and multimedia!

♦ **Editable Text**
Add formatted color text to an image, reposition and scale it, integrate it with your design. Text layers keep the contents separate so you can go back and alter the words or formatting at any time!

♦ **Special Erase Options**
Need to remove that blue sky and leave the clouds? Use the Flood Eraser to fill the blue regions with transparency. Want to isolate a shape from a flat color background? The Background Eraser samples pixels under the brush, so only unwanted colors drop out.

♦ **Image Enhancement**
Apply professional, darkroom-style color and histogram adjustments to your images. Employ the Blur and Sharpen tools to enhance or reduce local detail... blend multiple layers more cleanly. There's even a dedicated tool for removing "red eye" from flash photos.

♦ **Special Effects, Image Correction Filters**
A wild and whimsical assortment for instant creativity! Powerful image correction functions for fingertip control over tones and colors. Add Shadow, Bevel, Emboss layer effects for a sophisticated 3D look on text or other image elements. PhotoPlus supports third-party Photoshop® plug-ins, and even lets you design your own custom filters.

♦ **Editable Adjustment Layers**
Not only apply color corrections and special effects, but store each change on a separate layer. To fine-tune any adjustment later, just click its layer and change the settings!

♦ **Versatile Deform and Warp Tools**
"Swiss Army Knife" of image tools, Deform lets you rotate, resize, skew, reshape, or add perspective to any selection or layer. Warp tools pull, stretch, and distort image details, or shrink and enlarge. Pixels turn to putty with the Mesh Warp tool! Use a customizable grid of points and lines to bend images with precision.

♦ **Gradient Fills**
Take your pick of radial, linear, conical, or square fills—perfect for masking, to hide or reveal parts of your photo using smooth graduated blends to transparency. (Of course, there's standard flood fill as well.)

♦ **Image Slicing and Image Maps**
Now it's not just the pros who can use these techniques to add links to Web graphics! Simply click to divide images into segments—each with its own hyperlink and popup text—or add hotspots to specific regions. PhotoPlus outputs the HTML code and lets you preview the results directly in your Web browser.

♦   **Advanced Tools and Features**
Built-in support for most pressure-sensitive graphics tablets. RGB, CMYK, HSV, and Grayscale color modes. Robust and convenient layer management with pop-up preview and masking support. Extract command to isolate a face, feature, or object.

♦   **Professional Output Options**
Output using CMYK separations or print directly to your desktop printer with powerful controls. Include registration marks, crop marks, file information, grayscale and color bars, and tile or scale your output if required.

♦   **Productive MDI Interface**
Open and view multiple images and edit them simultaneously. Dockable, floating tab windows work in conjunction with convenient toolbars. The Navigator and Layers tab provide full control over all regions and planes. Each document stores a massive Undo range with dynamic memory and disk management, compressing information for optimized performance. Built-in Autoselect for rapid navigation in multi-layered images... handy Measure tool for checking pixel dimensions... the Undo History tab so you never lose track of where you've been. And PhotoPlus remembers your preferred export settings, so your creative flow is undisturbed.

And that's only part of the story! The PhotoPlus feature set includes all the standard capabilities you'd expect in a photo editor. Tools like Paintbrush, Airbrush, Clone, Smudge, and Erase. Customizable brush tips, opacity, and blend mode settings. Flip, rotate, and crop. Anti-aliasing. TWAIN support for scanner and digital camera input. A full range of supported file formats for both import and export. Bonus TrueType fonts. In short, more features for the price than allowed by law in some jurisdictions (but don't tell anyone)...

Registration, Upgrades, and Support

If you see the Registration Wizard when you launch PhotoPlus, please take a moment to complete the registration process. Just call Serif toll-free and provide the installation number and code shown. We'll give you a personalized registration number in return. Remember, if you need technical support please contact us. We aim to provide fast, friendly service and knowledgeable help.

Installation

PhotoPlus system requirements

PhotoPlus runs with Windows 95 or later, so you'll need a PC setup which runs Windows adequately. If you need help installing Windows, or setting up your printer, see Windows documentation and help.

Minimum:
♦ IBM compatible Pentium PC with CD-ROM drive and mouse (or other Microsoft compatible pointing device)
♦ Microsoft Windows® 95, 98, 98 SE, Me, 2000, XP, or Windows NT® 4.0 or later operating system
♦ 70MB (Windows 95/98), see manufacturer's requirements for other operating systems
♦ 40MB (recommended install) free hard disk space
♦ SVGA display (800x600 resolution, 16-bit color or higher)

Additional disk resources and memory are required when editing large and/or complex images.

Optional:
♦ Windows-compatible printer
♦ TWAIN-compatible scanner and/or digital camera
♦ Stylus or other input device, including pressure sensitive pen
♦ Internet account and connection required for accessing online resources.

What you need to know

PhotoPlus is very easy to use, and you don't need to have any prior design experience. However, if you're new to Windows computing, you will find it much easier if, before installing and using PhotoPlus, you spend a little time becoming familiar with the Windows operating environment.

❑   From the Windows desktop, click the **Start** button at the lower left and choose **Help**.

First-time install

To install PhotoPlus, simply insert the Program CD-ROM into your CD-ROM drive. The AutoRun feature automatically starts the Setup process and all you need to do is select the PhotoPlus Install option and answer the on-screen questions. If the AutoRun does not start the install, use the manual install instructions below.

Manual install/re-install

To re-install the software or to change any part of the installation at a later date, select **Settings/Control Panel** from the Windows **Start** menu and then click on the **Add/Remove Programs** icon. Make sure the correct CD-ROM is inserted into your CD-ROM drive, click the **Install...** button, and then simply follow the on-screen instructions. To install just one particular component to your hard drive, choose the Custom option and check only that component.

Getting Started

Seven Key Concepts

If you're new to photo editing programs, or perhaps have only worked with a basic painting program like Microsoft Paint, a number of the concepts in PhotoPlus may be new to you. Don't be daunted! Many thousands of artists have made the leap—the rewards are well worth it!

This section collects in one place some background material that should serve as a concise introduction and save you some "head-scratching" later on. We recommend you read through it before racing ahead to the rest of the chapter. And check out the "Key Concepts" tutorial on the PhotoPlus 8.0 Resource CD-ROM for a hands-on walkthrough!

1 Image size and canvas size

Sometimes a tricky distinction if you haven't encountered it before, this is an important one when working with digital pictures. You probably know that image dimensions are given in **pixels** (think of pixels as as the "dots of paint" that comprise a screen image)—say, 640 wide by 480 high. If you want to change these dimensions, there are two ways to go about it, and that's where **image** and **canvas** come into play. Changing the image size (I) means scaling the whole image or just a selected region up or down. Changing the canvas size (C) means adding or taking away pixels at the edges of the image—rather like adding a border around a mounted photo, or taking a pair of scissors and cropping the photo to a smaller size. Either way, after resizing, the image and canvas dimensions are once again identical.
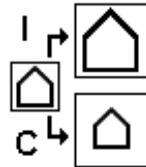
2 Interacting tools and tabs

The **Tools toolbar** (see the *PhotoPlus Toolbars and Tabs* diagram later in this chapter) is at the heart of PhotoPlus. Among its many offerings you'll find several basic **painting/drawing** tools, plus tools for **erasing**, **filling** a region, and **cloning** a region (all covered in detail in Chapter 4). As you try each of these tools, keep in mind that the **Tool Properties tab** and **Brush Tip tab** extend each tool's functionality by letting you customize its settings. Only with the aid of the tabs can you choose a wide brush as opposed to a pencil point, or experiment with the full range of effects each tool can command.
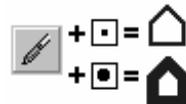
3 Making a selection

In any photo editing program, the **selection tools** (see Chapter 3) are as significant as any of the basic brush tools or commands. The basic principle is simple: quite often you'll want to perform an operation on just a portion of the image. The wide range of selection options in PhotoPlus lets you:

- ♦   Define just about any selection shape
- ♦   Modify the extent or properties of the selection
- ♦   Carry out various manipulations on the selected pixels, including cut, copy, paste, rotate, adjust colors, apply special effects, etc.

Although the techniques for using each selection tool vary a bit, the end result of making a selection is always the same: a portion of the image has been roped off from the rest of the image. The boundary is visible as a broken line or **marquee** around the selected region.

4 Foreground and background colors

At any given time, PhotoPlus allows you to work with just two colors—a **foreground** color and a **background** color. These are always visible as two swatches on the **Color tab**. Electronic artists expend much of their creative energy deciding which of the millions of available colors should fill those two slots. The actual steps involved, however, can be quite simple (see Chapter 4).

5 Layers
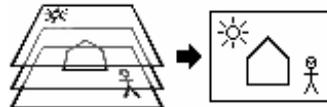
If you're accustomed to thinking of pictures as flat illustrations in books, or photgraphic prints, the concept of **image layers** may take some getting used to. In a typical PhotoPlus image—for example, a photograph you've scanned in, new picture file you've just created, or a bitmap file you've opened—there is one layer that behaves like a conventional "flat" image. This is called the **Background layer**, and you can think of it as having paint overlaid on an opaque, solid color surface. (Don't confuse the "background color" with the "Background layer"—there's absolutely no connection!)

On top of the Background layer, you can create any number of new layers in your image. Each new one appears on top of another, comprising a stack of layers that you can view and manipulate with the Layers tab. We call these additional layers **standard layers** to differentiate them from the Background layer. Standard layers behave like transparent sheets through which the underlying layers are visible.

With few exceptions, you will work on just one layer at any given time, clicking in the Layers tab to select the current or **active layer**. Selections (see above) and layers are related concepts. Whenever there's a selection, certain tools and commands operate only on the pixels inside the selection—as opposed to a condition where nothing is selected, in which case those functions generally affect the entire active layer.

If your image has multiple layers, and you switch to another layer, the selection doesn't stay on the previous layer—it follows you to the new active layer. This makes sense when you realize that the selection doesn't actually include image content—it just describes a region with boundaries. And following the old advice "Don't confuse the map with the territory," you can think of the selection as a kind of outline map, and the active layer as the territory.

There are a few other special-purpose layers. For example, you can add **adjustment layers** (see Chapter 3) that let you try out effects on lower layers without actually applying them until you're ready to do so. PhotoPlus stores the text you create on **text layers**, while shapes go on **shape layers**. Both text and shape layers (see Chapter 4) work pretty much like standard transparent layers, and keep their respective elements editable so you can go back and make changes later.

We'll delve further into layers later in this chapter. Chapter 5 provides in-depth coverage.

6 Opacity and transparency

Opacity and **transparency** are complementary—like "half full" and "half empty." They both refer to the degree to which a particular pixel's color contributes to the overall color at that point in the image. (Pixels again are the "screen dots" that comprise a bitmap image in PhotoPlus.) Varying opacity is rather like lighting a gauze backdrop (scrim) in a theater: depending on how light falls on it, it can be rendered either visible or invisible, or in between. Fully opaque pixels contribute their full color value to the image. Fully transparent pixels are invisible: they contribute nothing to the image.

In-between pixels are called semi-transparent. You'll primarily encounter these terms in two contexts. First, as a property of the pixels laid down by individual **paint tools**, which can be more or less opaque, depending on the tool's opacity setting. Second, as a property of individual **layers**, where opacity works like a "master setting" that you can vary after paint has been laid down.

7 Saving and exporting

Saving a file in PhotoPlus means storing the image in the native PhotoPlus file format, using the **.SPP** extension. This format preserves image information, such as multiple layers, masks, or image map data, that would be lost in conversion to another graphic format. On the other hand, suppose you've opened a .BMP or .JPG file and want to save it back to its original format. In this case, use the **Save Original** command.
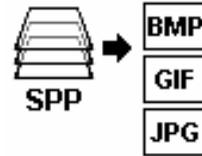
In yet another instance, you may be ready to save an .SPP file (or convert some other image type) to one of the standard graphics formats. In PhotoPlus, this is known as exporting. PhotoPlus includes a powerful **Export Optimizer** that serves as your "command center" for exporting images to various formats. It not only provides a variety of options for each supported format, but lets you compare image quality using different settings and even retains your preferred settings for each format!

There's more on saving and exporting later in this chapter, and Chapter 7 includes details on file formats and optimizing images.

Starting PhotoPlus

Enough tedious lecture—on to the demonstrations! (We'll skip the quiz.) It's time to begin exploring PhotoPlus.

☞ **NOTE:** Throughout the Companion, you'll see ❑ checkbox bullets that mark the ongoing tutorial thread—steps we'd like you to complete as you follow along with the text. You'll come across many other descriptions and examples of commands, tools, and procedures (and of course you're encouraged to experiment). But remember—unless a step has a checkbox, it's entirely optional!

The Setup routine adds a **Serif PhotoPlus** item to the **Programs** submenu of the Windows **Start** menu.

❑   Use the Windows **Start** button to pop up the Start Menu and click on the PhotoPlus item.

PhotoPlus launches and displays the **Startup Wizard**, with a variety of choices:

♦   **Open Saved Work** displays a browser that lets you preview and open saved image files—pictures in any supported format as well as animated GIFs (see Chapter 3).

♦   **Create New Picture** opens a new image window using a size and background color you specify (see Chapter 4).

♦   **Create New Animation** opens a new image window and displays the Animation tab, with controls for creating animation frames (see Chapter 6).

♦   **Import from TWAIN** lets you bring in pictures from devices like scanners and digital cameras (see Chapters 3 and 7).

♦   **View Samples** opens the gallery of PhotoPlus images.

If you don't care to see the Startup Wizard again, uncheck the "Use the Startup Wizard next time" box. However, we suggest you leave it checked until you're familiar with the equivalent PhotoPlus commands.

❑   Click **Open Saved Work** and then click the **Browse** button in the dialog.

❑ PhotoPlus is set to initially display the contents of the PhotoPlus PROJECTS folder, located on your hard disk. If the Open dialog displays a different folder, browse to PROGRAM FILES\SERIF\PHOTOP80\PROJECTS.

☞ **NOTE:** Whether or not you use the Projects folder to store your own work, remember its location so you'll know where to find Companion source files when they're needed later on.

❑ Select the file CAT.JPG in the Projects folder and click **Open**.

The cat photograph opens in a new image window (your precise screen layout may vary somewhat from the illustration).

Getting Your Bearings

Now that you've got an image open, and the PhotoPlus menus and tools are available, let's take a quick look around the PhotoPlus environment. Even if you're in a rush to start working, don't skip the rest of the chapter! At the very least, take note of what's here so you'll know where to find the information when you need it later.

Introducing the interface

PhotoPlus is an MDI application. MDI stands for Multiple Document Interface and it means that you can have multiple documents—images, in PhotoPlus terms—open at the same time. Each image window contains one image, with the image's name shown in the window's titlebar. At any given time, one image window will be **active** in front of any others, with its name shown in the main PhotoPlus titlebar.

You can use commands from the **Window** menu to arrange the image windows. If you have more than one image open, then you can switch to another window using the Window menu or the keyboard shortcut **Ctrl+Tab**. Double-click on an image window's titlebar to maximize it.

The PhotoPlus **toolbars** and **tab windows** (**tabs** for short) are are essential features of the PhotoPlus environment. The *PhotoPlus Toolbars and Tabs* diagram on the next page identifies the principal tabs and provides an overview of what they do.

To display the related online help topic for any tab, first click the Help button on the top toolbar, then click the tab.

When you first launch PhotoPlus, it opens with the PhotoPlus toolbars and tabs all visible in default positions, with certain tabs "docked" or joined together. You can hide, show, or move them individually as needed, and dock or undock the tabs. Chances are you'll want to keep the Tools toolbar visible, but if your display area is large enough you might consider moving it to a horizontal position alongside the top (Standard) toolbar—or "floating" it as a separate palette. Remember, there's nothing fixed about the PhotoPlus interface, so feel free to try different arrangements until you're satisfied.
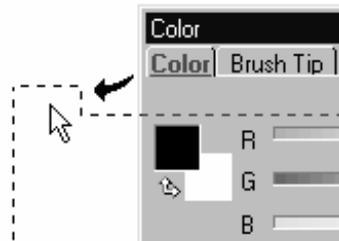
## *Principal PhotoPlus Toolbars and Tabs*

Standard toolbar
Provides standard file and Clipboard commands, plus
Zoom, Pan, Measure, and Web graphics tools.
Click the [?], then any tab, for context-sensitive help!

Tools toolbar
Features tools for selecting regions of the screen,
painting and erasing, cropping and deforming selections,
adding shapes and text, retouching... and more
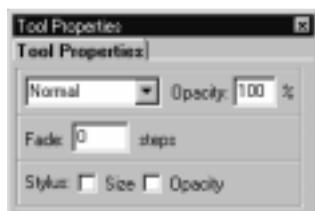
Tool Properties tab
Lets you customize the
settings for many of the tools
on the Tools toolbar

Brush Tip tab
Lets you choose and customize
brush tips for the painting tools,
define custom brushes
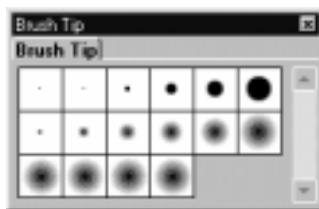
Paths tab
Stores independent outlines
you can convert to (or from)
selections, apply to any layer
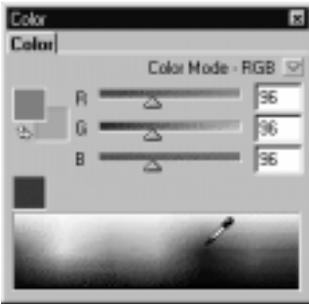
Color tab
Lets you select foreground and background colors and change the color mode

Layers tab
Has controls for creating, deleting, arranging, merging, and setting properties of layers in the image
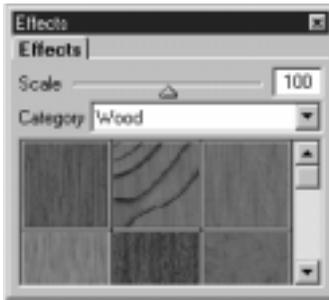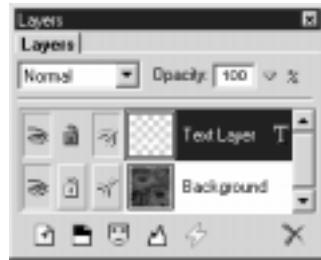
Instant Effects tab
Provides multiple categories of preset effects for spectacular textures and dimensionality

Navigator tab
Lets you quickly see different parts of the image and change the zoom view

Animation tab
Provides controls for editing animation files (only appears in Animation mode)

To turn off a tab, click the ☒ **Close** button in its titlebar. To turn a tab or toolbar off or on, uncheck or check its name on the View menu. If you need more room on-screen for a particular operation, press the **Tab** key to turn all the visible tabs off, and again to turn them back on.

To dock or undock a tab, click on its label and drag to the new position, either floating independently or docked in a window next to another tab.

It's easy to get online help in PhotoPlus. For a summary, see the "Getting Help" section at the end of this chapter.

Setting preferences

To specify the ruler units, grid interval, and other preferences, choose **Preferences...** from the File menu to open the Preferences dialog. Select the appropriate options on the Undo, Plugins, Layout, Startup, and/or Browser tab of the dialog. Note that less compression in Undo will provide faster performance.

Changes to the Plugins folder will not take effect until PhotoPlus is closed and restarted.

When you have made your choices, click the **OK** button to save your changes or click **Cancel** to abandon them.

Setting the view

Zooming (changing the relative size of the image in relation to its window) and **panning** (moving the image in relation to its window) are essential when you're operating at different levels of detail, or on different portions or an image. PhotoPlus provides standard Zoom and Pan tools, plus the **Navigator tab** which combines the best of both—it lets you quickly see different parts of the image and change the zoom view.

🔍 To change the image scale, choose the **Zoom tool** from the Standard toolbar. To zoom in, left-click on the image. To zoom in on a particular region, drag with the tool to outline the region. To zoom out, right-click on the image. The current zoom percentage appears in the titlebar of the image window, next to the file name. By the way, if you have a wheel mouse, you can simply spin the wheel to change the zoom view!

You can also set a specific zoom ratio by choosing **Zoom In** or **Zoom Out** from the View menu, then selecting a ratio from the submenu. To restore a 1:1 viewing ratio, choose **Normal Viewing** from the View menu.

To pan, Choose the **Pan tool** from the Standard toolbar and drag the image to move it in relation to its window.

The **Navigator tab** lets you quickly see different parts of the image and change the zoom view.

The red **view box** rectangle on the preview window marks the area of the image currently visible in the image window. You can drag it around or click the preview to change how the image is framed in its window.

Click the "-" button to zoom out, "+" to zoom in, or drag the slider to change the zoom view. The current view ratio appears at the right.

How to Get an Image into PhotoPlus

Before you can manipulate an image, you'll need something to work with! PhotoPlus can open images saved in a wide variety of industry-standard file formats, and acquire images from your TWAIN-compliant digital camera or scanner.

To get a saved image into PhotoPlus, you select **Open Saved Work** from the Startup Wizard. The dialog displays image files you've recently worked on; select a file or click the **Browse** button to locate other saved files. As an alternative to using the Startup Wizard, you can select the name of a recently opened file from the File menu or choose **File/Open...** to display the Open dialog.

The Open dialog shows dimensions and **bit depth** (see Chapter 7) information for each selected image. To display a thumbnail of the image, check **Show preview**.

Another option is to use the PhotoPlus Image Browser, which automatically creates thumbnails for images in the folders you open. To launch the Image Browser, choose **Image Browser...** from the File menu (or **Browse Resource CD-ROM...** to view content on the PhotoPlus Resource CD). Select source folders and preview thumbnails until you find the image you need. Right-click a thumbnail for information about the source image.

As a shortcut from either Windows Explorer or the Image Browser, you can simply drag and drop a file icon or preview thumbnail into PhotoPlus. If you drop onto an open PhotoPlus image window, the picture appears as a new layer. To open a new image window, drop onto a blank region within the main window.

If your scanner or digital camera supports the industry-wide **TWAIN** standard, you can bring pictures from these devices directly into PhotoPlus. (To set up your TWAIN device for importing, see the documentation supplied with the device for operating instructions.)

To begin scanning a picture into PhotoPlus, either select the **Import From TWAIN** option in the Startup Wizard, or, if the program is already running, choose **Import** from the File menu and then select **Acquire**. (If PhotoPlus is running but there's no image window open, choose **New** from the File menu to display the Startup Wizard.) If you have more than one TWAIN-compatible device installed, you may be prompted to select one as the source—or you can specify a different source by choosing **Import/Select Source** from the File menu.

The acquisition software for the selected device will start up and display its window, and you can then carry out the scan, possibly having made a few basic adjustments. Note that the features available in image acquisition software vary widely and are not under the control of PhotoPlus. Usually, you will at least be able to adjust settings for the image source (such as a color photograph, black and white photograph, or color halftone) and the resolution at which the image is to be scanned. For color theory and tips on scanning, see Chapter 7.

Whether you import the image via the Open dialog or the TWAIN interface, it will appear in a new image window in PhotoPlus. Assuming the image is not in the native PhotoPlus (.SPP) format, it will always have just a single layer, called the **Background layer** (see "Seven Key Concepts" earlier in the chapter). Chapter 5 will explore layers in considerable detail; until then we'll be focusing on techniques that work perfectly well on one—or at most two—layers.

Saving and Exporting Files

PhotoPlus can save images in its own .SPP format, or export them to any standard format (again, see "Seven Key Concepts").

 Use **File/Save** (or click the **Save** button) to save images in PhotoPlus's own .SPP format. Only .SPP images preserve information such as multiple layers, masks, or image map data that would be lost in conversion to another graphic format.

Use **File/Save As...** to save the image as an .SPP file under a different path or name. You can store files anywhere on your system. It's a good idea to group your images, for example into project-oriented or thematic folders.

Suppose you've opened a .BMP or .JPG file, done some editing (without adding layers), and now wish to save it back to its original format. In this case, you can use the **File/Save Original** or **File/Save Original As...** commands. Using the former will overwrite the original file—so be sure that's what you want to do.

In many situations, you'll want to save a file to one of the standard graphics formats. In PhotoPlus, this is known as **exporting**. You can use the **Export Optimizer** to preview image quality before at various settings before going ahead with the export.

The File menu offers two ways of accessing the Optimizer. Either choose **File/Export Optimizer...** to display it directly, or choose **File/Export...** and then click the **Optimize** button in the dialog. The Export dialog itself is a standard file dialog where you can specify the path, name, and format for the image file.

The Export Optimizer consists of a left-hand preview display and a right-hand settings region, with additional buttons along the left of the dialog. In animation mode, there's an extra tab for changing output settings.

To display a different portion of the image, drag the image in the preview pane. To change the display scale, click the **Zoom In** or **Zoom Out** buttons at the lower left.

To adjust the preview display, click one of the View buttons at the lower left to select Single, Double, or Quad display. The illustration above shows Double view. The multi-pane (Double and Quad) settings let you compare different export settings for one or more file formats. Just click one of the display panes to select it as the active pane, then use the Options panel at the right to choose an export format and specific settings. Each time you make a new choice, the active pane updates to show the effect of filtering using the new settings, as well as the estimated file size!

When you've picked the optimum export settings, click the dialog's **Export** or **OK** button to proceed to the Export dialog.

For details on image file formats and optimization, see Chapter 7.

Printing

Printing is controlled from the Print dialog, which you can access by choosing **Print...** from the File menu, clicking the **Print** button on the Standard toolbar, or pressing **Ctrl+P**.

Choose the printer to use from the drop-down list. If necessary, click the **Properties...** button to set up the printer for the correct page size, etc. It's very important to set up your printer correctly to get the best results. Click the **Options...** button if you need to set special print options such as scaling, tiling, or CMYK color separations. (The various print options are detailed in Chapter 7.)

After setting the printer properties and the print options, click on **OK** in the main print dialog to send the image to the printer. Depending on the size and complexity of the image, and the printer you're using, it may take several minutes before the printed page emerges.

Getting Help

The PhotoPlus online help system is designed to work for you. Whatever your background, you'll find it easy to navigate.

♦   To begin learning about PhotoPlus tools and menus, just move the mouse pointer around the screen. Watch the HintLine at the lower right for capsule descriptions of each feature. Event Tips pop up as you try new tools and actions.

♦   For help on interface elements like toolbars and tab windows, click the Help button on the top toolbar, then click on an element.

♦   For help on dialog boxes, click their internal **Help** button.

Several **Help menu** choices take you to key features of online help:

♦   Choose **PhotoPlus Help** to display the main help menu screen, displaying the table of contents and Visual Reference. Click the **Index** button to view an alphabetical list of terms and topics.

♦   Choose **Effects Gallery** to display a visual sampler of color adjustments, special effects, and blend modes—cross-referenced to help topics (see Chapter 3 for more).

Once inside online help, use the Visual Reference to explore elements of the interface, or choose How To topics from the table of contents for a step-by-step approach—whichever you prefer. The **Previous** and **Next** buttons let you browse adjacent topics, while the topic list keeps your place for you. Extensive cross-references make sure all the information is interlinked.

If you've purchased the PhotoPlus 8.0 Resource CD-ROM, you can choose **View PhotoPlus Tutorials** to access a set of illustrated, step-by-step mini-lessons. Stored in HTML format, the tutorials supplement the Companion's hands-on exercises to let you explore features in more depth. Check at the end of each Companion chapter for a handy summary of relevant tutorials. And be sure to visit the Serif Web site regularly to view the latest tips and tutorials!

Manipulating Images

This chapter will focus on ways of manipulating existing pictures, especially photos. We'll begin with a Hands-on Project using the "cat" image you briefly opened in the previous chapter. Note that all of the techniques described here can also be applied to images created from scratch, and to animations.

There are many reasons why you might want to manipulate a photo, including:

♦   Cleaning up an old, damaged photo

♦   Removing an unwanted item or slogan from the background

♦   Preparing an image for printing, use on the World Wide Web, or in another package

If you agree that it's time to do something about that smug-looking cat from Chapter 2, here's a Hands-on Project that provides an introduction to manipulating images. Remember, the bullet checkboxes denote the actual steps you should complete; anything else is optional.

HANDS ON: Captioning a Cat

❑   Open CAT.JPG in the PhotoPlus PROJECTS folder, if it's not already open. (See the section "Starting PhotoPlus" in Chapter 2.)

Cropping the image

Cropping is one of the easiest ways to improve the appearance of a photograph—by creating a more pleasing composition of its main elements. In this particular photo, there's just one main element, and it fills the whole image! However, there are a couple of problems with leaving the image uncropped. One is the rather boring curtain in the background; the other is the large blurry tail in front. So let's crop away everything except the cat's face.

PhotoPlus offers two basic ways of cropping an image. You can either select a region of pixels, using any of the various selection tools, and then use the **Image/Crop to Selection** command. We'll cover this method later in the chapter. If you're cropping to a rectangular shape its generally easier to use the **Crop tool**.

❑ Choose the Crop tool from the Tools toolbar and drag out a crop selection around the cat's head, as in the illustration. Start at one corner and drag to the other. Once you release the mouse button, you can adjust the selection rectangle by dragging its edges or corners, or from the center to move it.

❑ Once you've selected the correct area, double-click within the selection rectangle to complete the cropping.

By the way, if you make a mistake, don't worry. Most actions in PhotoPlus can be undone using **Undo** from the Edit menu, the **Undo** button on the Standard toolbar, or the keyboard shortcut **Ctrl+Z**. You can even undo an "undo"—use **Redo** on the Edit menu, the Standard toolbar, or with **Ctrl+Y**. (The **File/Preferences...** dialog lets you set options for the Undo function.) Or you can use the **Undo History tab** to review recent actions and jump back more than one step at a time.

Adjusting brightness and contrast

You may have noticed that this image is a little dark. No problem. We'll use one of the PhotoPlus image adjustment filters to improve it.

❑ Choose **Adjust>Brightness/Contrast...** from the Image menu to open the Brightness and Contrast Filter dialog.

❑ Experiment with the **Brightness** and **Contrast** sliders. Each time you change a slider setting, the image updates. Alternatively, you can type values directly into the fields at the right.

Although you may not achieve perfection with just the Brightness/Contrast adjustment, try to obtain solid "bottom" and "top" (shadow and highlight) regions without obscuring details or washing out the image. The Brightness slider tends to move all the tones in the image one way or the other; Contrast compresses or expands the spread between bottom and top. Try the values shown—but remember that monitor settings and room lighting can make a difference.

❑   When the picture looks good, click **OK**. (If you click **Cancel**, the
photo returns to its previous state.)

❑   At this point, you may wish to save the picture as a PhotoPlus (.SPP)
file using **File/Save…**.

Adding a caption

Finally, we'll venture into uncharted territory. Adding a caption to the
photo is easy, but it will introduce several new operations: choosing a
color, using the Text tool, and working with more than one layer. Don't
worry—it will be a very mild introduction!

❑   Locate the **Color tab**, which is probably
still open at the right side of the screen—
but if it's hidden, check its item on the
View menu to display it. Click the tab so it
comes to the front and you can see all of it.

The Color tab includes (among other things) two
color swatches that show the current foreground
and background color (another of those "Key Concepts"), and a spectrum
box that lets you change them.

❑   Move the "dropper" cursor over the spectrum box and a preview
swatch (as shown in the illustration) will appear, showing the exact
color under the cursor. Find a very light color that you like, and left-
click. You'll see the foreground swatch update. If you want to
choose a different color, move the cursor and click again.

❑   Now choose the $\mathbf{A}$ Text tool from the Tools toolbar. Notice there are two text tools on the flyout. Pick the first one, which is for solid text (the other is for creating selections in the shape of text).

❑   Once your cursor has changed to an "A," click it on the picture in the approximate position where you want the text to be. This opens the **Add Text** window.

❑   Type the caption text (on two lines, if you're using our example) and choose a font, pointsize, and style (we used Arial 14pt Bold).

Note that the formatting is applied to all the text in the window (no need to select it first), and that the text is black (for visibility) rather than the foreground color at this point. The dialog also has an **Adjust Color** button—but let's leave that for later.

❑   Click **OK** to insert the caption.

The text appears (in the foreground color) on a new **text layer** above the Background layer that has the photo. The text layer is now the active layer. Because it's on a separate layer, the text is editable and can be repositioned independently of any other image layers. (Chapter 4 will have more on working with text.)

❑ Choose the ⊕ Move tool from the Tools toolbar and drag the text around until it is in the right position on the image.

Finally, save the modified image again and/or export it to another format, such as .BMP or .JPG. Since exporting "flattens" the image into a single layer, you'll probably want to retain an .SPP image with the layers intact, in case you decide to do some more editing later.

Making Selections

Before you can apply effects or filters, or copy parts of a picture to the Clipboard, you must define an active selection area.

Selection options

In the example just completed, you adjusted brightness and contrast in the image as a whole, and dragged an entire text layer around. Many times, however, you'll want to select just a subset of the image (or layer) to work on. Selecting, you may recall, was one of the "Key Concepts" presented in Chapter 2. Understanding what you can do with selections opens up exciting creative possibilities.

Whenever there's a selection, certain tools and commands operate only on the pixels inside the selection—as opposed to a condition where nothing is selected, in which case those functions generally affect the entire active layer. For example, when there's a selection, the brush tools only work inside the selection; the color simply doesn't affect outside pixels. If you apply an adjustment or special effect from the Image or Effects menus, it only affects the selected region.

Clicking a layer's name on the Layers tab makes it the active layer. To select the whole active layer, choose **Select All** from the Select menu or press **Ctrl+A**. To select just opaque pixels, **Ctrl**-click the layer thumbnail.

PhotoPlus offers a very wide range of selection methods, and a variety of commands for modifying the extent or properties of the selected pixels.

The standard selection tools are located on the **Standard Selection Tools** flyout on the Tools toolbar. There you can choose from the Rectangle, Ellipse, Freehand, Polygon, or Magnetic selection tools.

To select a rectangular or elliptical area, select the **Rectangle** or **Ellipse** tool from the flyout and drag to define a region on the image.

Rectangle / Square   **Ellipse / Circle**
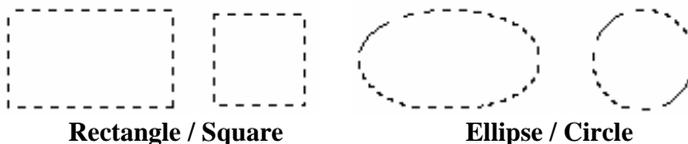
The selected region is bounded by a broken line or **marquee**, and the cursor over the selection changes to the Move Marquee cursor, which lets you reposition just the marquee as needed without affecting the underlying pixels.

Holding down the **Ctrl** key during dragging constrains the selection shape to either a square or a circle.

To select a freehand (irregular) area, select the **Freehand** selection tool and just drag to draw around the area to be selected, making a closed area.

Or use the **Polygon** selection tool to draw a series of line segments (double-click to close the polygon).

**Freehand**   **Polygon**
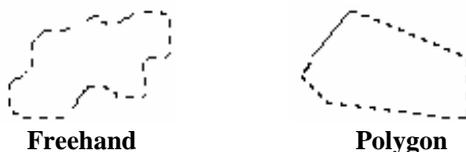
The **Adjustable Selection Tools** flyout, a unique PhotoPlus feature, offers 24 different variable selection shapes, including pie, star, arrow, heart, spiral, wave, and so on.

Here's how the adjustable selection tools work. We'll use the regular polygon selection shape as an example. Choose a tool from the flyout and drag out a shape on the image. You can hold down the **Shift** key to constrain the selection's aspect ratio.

The regular polygon appears as a blue outline with two slider tracks bounding it. Each of the slider tracks has a square handle, and when you move the cursor on to the handle it will change to a small + sign. As you drag the sliders, the shape's properties change. In the case of the polygon, one slider varies the number of sides, while the other rotates the shape. As with standard selections, you can move the whole selection around by dragging from its center.
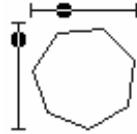
Once you're satisfied with the selection, double-click in the center (just as with the Crop tool or Magnetic selection tool) to complete the marquee.

The **Magnetic Selection tool** makes it easy to isolate part of an image where there's already a bit of an edge showing. You simply trace around the edge, and PhotoPlus snaps the selection marquee to the nearest dramatic color change. Click once on the image to place a starting node along an edge. With the mouse button up, trace along the edge; the marquee line follows the nearest edge. At regular distances, nodes automatically appear along the line. Only the portion of the line beyond the last node remains adjustable.
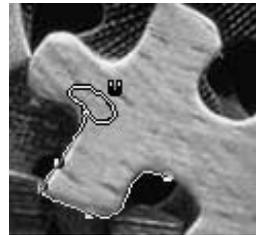
You can add a node manually (for example, at a corner), by clicking once, or "back up" by pressing **Delete** to undo recent nodes one at a time. To close the selection region, double-click or click again on the starting node. On the Tool Properties tab, you can adjust the tool's **Frequency** (distance between automatic nodes) and **Contrast** (edge sensitivity) for best results. As a shortcut, press the up and down arrow keys (or use your mouse's spinwheel) to adjust the contrast setting on the fly.

If you're trying to lift a region away from its background and find the Magnetic selection tool still too laborious, try the Edit menu's **Extract...** command. This lets you mark the edge contour rapidly using a broad brush, and then applies edge-detection within the swath you've marked. Note that Extract directly affects the layer or selection—pixels outside the detected edge vanish to transparency, while interior pixels are preserved. (See online help for details.)

Using the **Color Selection tool**, you can select a region based on the color similarity of adjacent pixels.

To make a selection in this way, choose the tool from the Tools toolbar and then click on a starting pixel. This selects the pixel you clicked, and any adjacent pixels that are similar in color, as measured by the **tolerance** value shown on the Tool Properties tab. You can raise or lower the tolerance setting to include more or fewer pixels.

PhotoPlus also offers a **Text Selection tool** that lets you create a text-shaped selection region and vary its size or font (see the next chapter).

Modifying the selection

Once you've used a selection tool to select a region, you can carry out a number of additional steps to fine-tune the selection before you actually apply an effect or manipulation to the selected pixels.

Any time you're using one of the selection tools, the cursor over a selected region changes to the Move Marquee cursor, which lets you drag the marquee outline to reposition it. In this case you're *only* moving the selection outline—not the image content inside it. You'd use the Move tool (see below) to drag the selection *plus* its image content.

If the selection you've made isn't quite the right shape, or doesn't quite include all the necessary pixels (or perhaps includes a few too many), you can continue to use the selection tools to add to, or subtract from, the selected region. To add to the existing selection, drag with the selection tool while holding down the **Shift** key. To subtract, drag while holding down the **Alt** key. Pressing the **Ctrl** key changes the tool temporarily to the Move tool (see below), so you can move the selection's content.

The Tool Properties tab includes four combination buttons (■ **Standard**, ▣ **Add**, ▢ **Subtract**, and ▣ **Intersect**) that determine the effect of each new operation with a selection tool. You may find this easier than using the keyboard shortcuts, and the Intersect option is unique. Starting with a standard square selection, here's what a second selection operation might produce with the other combination settings:

| **Standard** | **Add** | **Subtract** | **Intersect** |
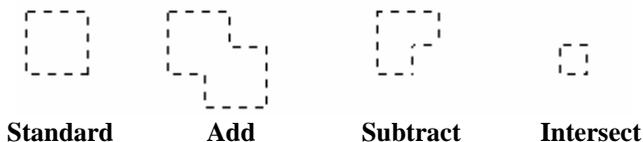
The **Modify** item on the Select menu provides a submenu with several functions that can save you the trouble of hand-drawing to change the selection boundaries. Choose **Contract...** to shrink the borders of the selection, or **Expand...** to extend its borders. **Border...** creates a new selection as a "frame" of a specified pixel width around the current selection. If the selected area has ragged edges or discontinuous regions (for example, if you've just used the Color Selection tool), you can use the **Smooth...** command to even them out.

Grow and **Similar** both expand the selection by seeking out pixels close (in color terms) to those in the current selection. **Grow** only adds pixels adjacent to the current selection, while **Similar** extends the selection to any similar pixels in the active layer. Both of these use the current tolerance value entered for the Color Selection tool (see above).

To remove the current selection, choose **Deselect** from the Select menu, or use the keyboard shortcut **Ctrl+D**.

The **Invert** command on the Select menu (shortcut **Ctrl+Shift+I**) selects the portion of the active layer outside the current selection. Unselected pixels become selected, and vice versa.

Variable selections

Just as grayscale is more than black-and-white, a selection can be more complex than an all-or-nothing proposition. Within the selected/marqueed region, individual pixels can have varying degrees of "selectedness."

Anti-aliasing and **feathering** are properties of the various selection tools that can help you achieve softer edges and smoother blending of elements that are being combined in the image. You can turn either option on or off for the Standard and Adjustable Selection tools, using the check boxes on the Tools Properties tab. Anti-aliasing makes the selection's edge pixels semi-transparent, while feathering reduces the sharpness of a selection's edges not by varying transparency, but by *partially selecting* edge pixels. If you lay down paint on a feathered selection, the paint will actually be less intense around the edges.

You can apply feathering "after the fact" to an existing selection (but before applying any editing changes) using the Select menu's **Modify>Feather...** command. **Modify>Threshold** converts a feathered, soft-edged selection into a hard-edged selection. As with feathering, you won't see an immediate effect on the image, but painting and other editing operations will work differently inside the selection.

Paint to Select mode is a convenient way to achieve varying degrees of selectedness on a layer. Using the standard painting and editing tools in this mode, you can create a selection from scratch or modify an existing selection. Check **Paint to Select** on the Select menu and the image view switches to show fully selected regions masked in red and semi-selected regions in pink (deselected regions are unmasked). This view shows "selectedness" much more clearly than the standard marquee mode, so it's also a good way to preview or check a complex selection. Now you can paint or use other manipulations on the temporary mask to directly modify the selection according to the lightness of the colors you apply. Painting in white adds to the selection; black subtracts from it; gray creates partial selection.

In the illustration below, (A) depicts the incomplete result of using the Magnetic Selection tool on a white flower. In Paint to Select mode (B) the selected regions appear as red (gray here) and we are busy filling in the selected regions with a white brush. (C) shows the completely filled-in flower and (D) the fully selected result.

A   **B**   **C**   **D**
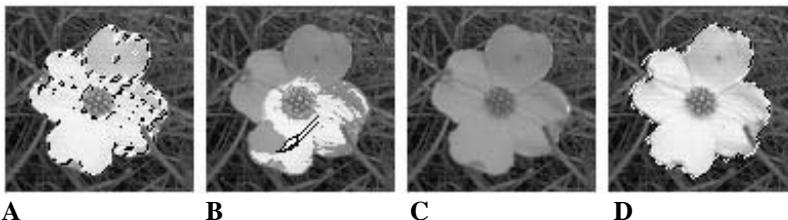
Once you have selected precisely the pixels you want to work on (as covered so far in this chapter), the question arises: what can you *do* with the selection—or technically speaking, with the pixels you've outlined? The rest of the chapter will survey the many possible manipulations you can perform.

Using the Move Tool

 The **Move tool** (unlike the Move Marquee cursor associated with the selection tools) is for pushing actual pixels around. With it, you can drag the content of a selection from one place to another, rather than just moving the selection outline. To use it, simply click on the selection and drag to the new location. The selected part of the image moves also.

If nothing is selected, dragging with the Move tool moves the entire active layer. (Or, if the Move tool's **Automatically Select Layer** property is selected, the tool intelligently moves to the first visible layer.) Moving image content on the Background layer exposes a "hole" that appears in the current background color; on standard layers, the exposed region is transparent.

To duplicate the contents of the selection on the active layer, press the **Alt** key and click, then drag with the Move tool.

As a shortcut if you're working with any one of the selection tools, you can press the **Ctrl** key to switch temporarily to the Move tool. Press **Ctrl+Alt** to duplicate. Release the key(s) to revert to the selection tool.

Cut, Copy, Paste, Delete

These operations work pretty much as you'd expect. You can use the buttons on the Standard toolbar, choose commands from the Edit menu, or use conventional keyboard shortcuts.

As with the Move tool, "holes" appear as either the current background color or transparent, depending which layer you're working on. Also keep in mind the handy **Alt**+Move tool operation (above) for quickly duplicating selected pixels.

When pasting from the Clipboard, PhotoPlus offers several options. The standard paste (**Ctrl+V**) operation creates a new, untitled image window. You can use other Edit menu choices to paste the Clipboard contents as a new layer (**Ctrl+L**), or centered into the current selection (**Shift+Ctrl+L**). The **Into Selection** option is useful if you're pasting from one layer to another. Because the selection marquee "follows" you to the new layer, you can use it to keep the pasted contents in registration with the previous layer.

Cropping

Cropping is the electronic equivalent of taking a pair of scissors to a photograph, except of course with a pair of scissors there is no second chance! Cropping deletes all of the pixels outside the crop selection area, and then resizes the image canvas so that only the area inside the crop selection remains.

If you tried the captioning project earlier in the chapter, you've already used the **Crop tool** to reduce an image to a regular, rectangular area. Just select the Crop tool from the Tools toolbar and drag out a

rectangular crop selection area on the image. (Hold down the **Ctrl** key
while dragging to constrain the selection to a square.) Adjust the selection
rectangle as needed, then double-click to complete cropping.
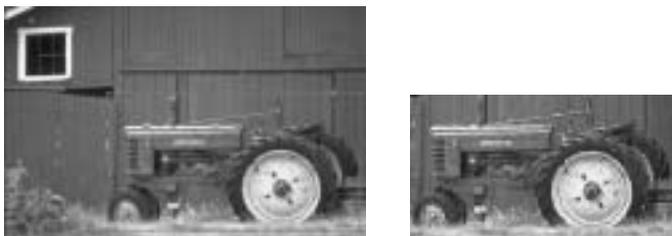
You can also crop an image to any selection region, no matter what
shape, as defined with one of the selection tools (see above).

Make a selection using one of the selection tools and then choose **Crop
to Selection** from the Image menu. For example, here's cropping applied
to a marquee drawn with the Freehand Selection tool:
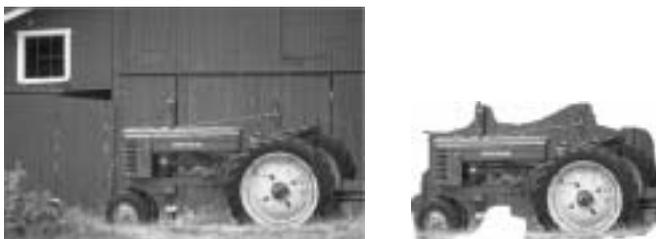
PhotoPlus always crops to a rectangular image. If the selection region is
non-rectangular, the left-over surrounding region will be either
transparent (on a standard layer) or the background color (on the
Background layer).

Tip: To convert the Background layer to a standard layer, right-click
Background on the Layers tab and choose **Promote to Layer**. Now
operations on the layer's content (such as moving, cutting, or irregular
cropping) will leave transparent "holes."

Flipping, Rotating, and Deforming

Flipping and rotating are standard manipulations that you can carry out
on the whole image, the active layer, or just on a selection.

To flip, choose either **Flip Horizontally** or **Flip Vertically** from the
Image menu, then select **Image**, **Layer**, or **Selection** from the submenu.
If you flip an image horizontally, be careful not to accidentally reverse
things like text, numbers, and so on.

To rotate, choose **Rotate...** from the Image menu to open the Rotate dialog. Set the rotation angle (90, 180, or 270 degrees, or enter a custom angle) and the direction (clockwise or counter-clockwise). Select **Image**, **Layer**, or **Selection** and click **OK**.

The image will rotate about the center point.

Original image   *15° counter-clockwise*   *10° clockwise*

 The **Deform tool** is a "Jack of all trades" that lets you move, scale, rotate, or skew a selection or layer. Try it on a text layer for unique results! Start by making a selection if desired, then choose the tool. A rectangle appears with handles at its corners and edges, and a fixed point (initially in the center of the region). If there's no selection, the rectangle includes the whole active layer.
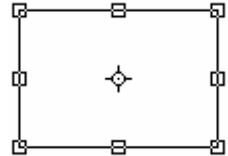
The tool's action depends on the exact position of the mouse pointer. As you move the pointer around the enclosed region, the cursor changes as shown below to indicate which action is possible.

   To **move the region** without any deformation, drag from its neutral midsection. This action works just like the Move tool.

   To **reshape the region**, drag from an edge or corner handle. A variety of options are available when you drag from a corner (watch the HintLine for tips). You can resize in two dimensions or relative to the fixed point, either with or without a constant aspect ratio. In addition, you can get skew or perspective effects that move either one corner by itself, or two adjacent corners!

   To **rotate the region** about the fixed point, drag from just outside a corner. To constrain rotation in 15-degree steps, press the **Shift** key after you've begun rotation, and hold it down until after you release the mouse button.

To **reposition the fixed point**, move the cursor to the exact center until a small target appears, then drag. The fixed point can be moved anywhere—even outside the deformation region.

HANDS ON: Deforming text

To get a feel for the versatility of the Deform tool, let's try a short project.

❑ To begin, choose **New** from the File menu and (on the Startup Wizard) click **Create New Picture**.

❑ In the New Image dialog, set the image dimensions to 500x500 or so. The background type should be set to White.

❑ Click **OK**, and the new image window opens. The image initially has a single Background layer.

❑ Now choose the **A** Text tool and click in the image to open the Add Text window. Type some text, set it large (around 24pt), and click **OK**. (You've done this before in the captioning project.) The new text appears on a separate text layer.

❑ Choose the Deform tool, which automatically grabs the text on the layer.

❑ Move the cursor near a corner handle until you it changes to a double-headed arrow. Then drag to resize the letters either vertically or horizontally.

❑ Hold down the **Shift** key and drag from a corner to resize in both dimensions at the same time.

❑ Hold down the **Ctrl** key over a corner handle. Continue to hold down the **Ctrl** key while dragging to skew the object.

❑ Move the cursor outside one corner of the text and it will change to a curved arrow. Try dragging to rotate the text, and holding down the Shift key for constrained rotation.

❑ Press **Shift+Ctrl+Alt** while dragging from a corner for a perspective effect. Note that you can still apply layer effects, fills, and other manipulations to deformed image content. And once you have rotated or deformed text, you can still edit it as long as it's on a text layer!

Using Mesh Warp

The **Mesh Warp tool** works like the Deform tool (see above) outfitted with complex curves. It lets you define a flexible grid of points and lines that you can drag to distort an image, or part of an image (or layer). You can edit the mesh to vary its curvature, and even custom-design a mesh to match a particular image's geometry, for more precise control of the warp effect.

When you first select the tool, a simple rectangular mesh appears over the image, with 9 nodes: one at each corner, one at the center, and one at the midpoint of each edge. Straight lines connect adjacent nodes. The Mesh toolbar also appears.
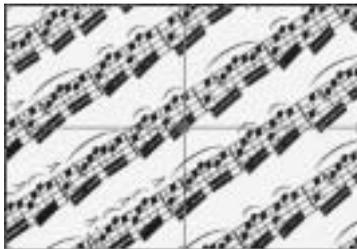
These "straight" line segments are actually bendable curves. When you alter the contours of the mesh and distort the initial rectangular grid, the underlying image deforms accordingly. To change the mesh, you simply move nodes, handles, or connecting lines; add or subtract nodes as needed; and/or edit nodes to change the curvature of adjoining lines.
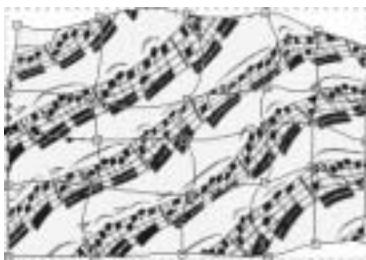
To **select a mesh node**, click it. (**Shift**-click or drag a marquee to select multiple nodes.) One or more **attractor handles** appear on the selected node(s) and on any adjacent nodes.

To **warp the mesh**, drag any mesh node or line segment, or drag a node's attractor handles. The image responds immediately as the mesh is warped.

To **add a new node**, double-click on a line segment or click the **Add Node** button on the Mesh toolbar.

To **delete** nodes, select them and press **Delete**, or click the **Delete Node** button.

The special **Deform Mesh tool** makes it easy to move, scale, skew, or rotate a portion of the mesh about a fixed point. It works just like the standard Deform tool (described above) on multiple nodes.

The bendability of line segments depends on the type of nodes at either end. You can change a node from one type to another simply by selecting it and using the Mesh toolbar buttons:

⌢ **Sharp** means that the curves on either side of the node are completely independent, so the contours can be adjusted separately.

⌢ **Smooth** means that the slope of the curve is the same on both sides of the node, but the depth of the contours on either side can differ.

⌢ **Symmetric** nodes join curves with the same slope and depth on both sides of the node.

See PhotoPlus online help for further details on Mesh Warp, including **Setup mode**, which lets you create an initial custom mesh that conforms to the underlying image, for more precise shaping of image contours.

Adjusting Image Values

PhotoPlus provides a number of different adjustment filters that you can apply to a selection or to a standard layer. Typically, these adjustments are used to correct deficiencies in the original image.You can apply them either directly, via the **Image/Adjust** menu, or (in most cases) by using an **adjustment layer**.

Each of the adjustment options works in a similar way. Alter the values by dragging on a slider, moving it to the left to decrease the value, or the right to increase the value, or enter a value in the field at the right of the slider.

Tip: Instead of dragging the slider with the mouse, you can click on it and then jog it with the left or right cursor arrow keys.

Here's a quick summary of the PhotoPlus image adjustments.

♦ **Levels** presents a histogram plot of lightness (luminance) values in the image, and you can adjust the tonal range by shifting dark, light, and gamma values.

♦ **Curves** displays lightness (luminance) values in the image using a line graph, and lets you adjust points along the curve to fine-tune the tonal range.

♦ **Color Balance** lets you adjust color and tonal balance for general color correction in the image.

♦ **Brightness/Contrast: Brightness** refers to overall lightness or darkness, while **contrast** describes the tonal range, or spread between lightest and darkest values.

♦ **Hue/Saturation/Lightness: Hue** refers to the color's tint—what most of us think of as rainbow or spectrum colors with name associations, like "blue" or "magenta." **Saturation** describes the color's purity—a totally unsaturated image has only grays. **Lightness** is what we intuitively understand as relative darkness or lightness—ranging from full black at one end to full white at the other.

♦ **Replace Color** lets you "tag" one or more ranges of the full color spectrum that requre adjustment in the image, then apply variations in hue, saturation, and/or brightness to just those color regions.

♦ **Selective Color** is a CMYK printing adjustment that lets you you add or subtract a certain percentage of cyan, magenta, yellow, and/or black ink.

♦ **Channel Mixer** lets you modify a color channel using a mix of the current color channels.

♦ **Gradient Map** lets you remap grayscale (lightness) information in the image to a selected gradient. The function replaces pixels of a given lightness in the original image with the corresponding color value from the gradient spectrum.

♦ **Threshold** creates a **monochromatic** (black and white) rendering. You can set the threshold, that is the lightness or gray value above which colors are inverted.

♦ **Equalization** evenly distributes the lightness levels between existing bottom (darkest) and top (lightest) values.

♦ **Stretch** establishes new bottom and top values and spreads out the existing lightness levels between them.

♦ **Negative Image** inverts the colors, giving the effect of a photographic negative.

♦ **Grayscale** reduces a color picture to 256 shades of gray.

♦ **Posterize** produces a special effect by reducing the image to a limited number of colors.

For an overview of image adjustments, take a look at the **Effects Gallery**, a component of PhotoPlus online help. It's a great way to get an overview of what Adjustments and Effects do. Choose **Effects Gallery...** from the Help menu, or click **Effects Gallery** on the main help Contents menu.

The Effects Gallery provides illustrations of all the Image and Effects menu adjustments and effects, plus the various Blend Modes (used for paint tools and layers, and discussed later in the Companion). For each category, there's a list of names. Clicking on the name shown in red text displays an example, and then clicking the name again (now in green text) displays the corresponding help topic in an adjacent window. This way you can browse the illustrations and read about them at the same time.

Click on the **View Original** button above each illustration to view the image as it appeared *before* the filter was applied. Click on the **Apply Effect** button to see the *after* state.

Adjustment layers

Adjustment layers let you introduce any number of effects experimentally. Instead of altering the image or layer directly, you allow yourself the option of revisiting the settings for a given adjustment as often as needed, while continuing to edit the image in other ways. If you later decide you don't even need an effect, you can simply remove it!

To create an adjustment layer, click the **New Adjustment Layer** button on the Layers tab (or choose the item from the Layers menu) and select the name of the adjustment to be applied; most of those listed above are available. Then, just as if you'd selected the same effect from the Image menu, you use a dialog to pick the settings to be applied. The image responds as if you'd used the Image menu—but if you look over on the Layers tab, you'll see a new adjustment layer has been inserted above the active layer.

Unlike the other layer types (as described in Chapter 5), adjustment layers don't store content in the form of bitmap images, text, or shapes. Rather, each adjustment layer applies one effect to content on the layers below it. You can even combine multiple effects by stacking several adjustment layers.

To change the specific settings for an effect, simply double-click the adjustment layer's name in the list and then use the dialog again. Right-click to access conventional layer Properties such as name and blend mode. You can drag an adjustment layer up or down within the list to determine exactly which other layers are below and therefore affected by it. To see how the image looks without the effect, click the **Hide Layer** button next to the adjustment layer's name. If you decide to permanently remove the effect, you can delete the layer.

Applying Effect Filters

The PhotoPlus Effects menu includes a number of commands that apply special effects to the active layer or selection. As with the image adjustment filters you can use these effects to improve the image—for example **Unsharp Mask** for crisper detail, **Median** to remove digital camera artifacts, or **Fix Red Eye** to make baby look human—but more often the emphasis here is on the wild and wacky (or perhaps we should say "creative") possibilities. If you're creating animations, you can turn most of these effects into animated transitions (see Chapter 6).

PhotoPlus lets you place industry-standard Photoshop plug-in filters in a Plugins folder and access them from the Effects menu. You can even define your own custom filters (see online help for details).

The Effects Gallery, as mentioned earlier, includes examples of all the special effects, cross-referenced to explanatory text for each effect.

To access a group of effects, choose **Effects** and select one of the commands.

At the top of most of the dialogs there is a preview window that updates as you adjust the sliders or enter new values. To see a different part of the image, drag it with the hand cursor. Click the Zoom buttons to zoom in or out.

Effects menu filters are not the only way to apply special effects. Several PhotoPlus tools let you use brushes to warp, smudge, blur, or sharpen the image locally. For details, see Chapter 4's discussion of the Warp and Retouch flyouts.

Finally, we should mention the wide range of PhotoPlus 2D and 3D **layer effects**, available on the Layers menu and as presets on the Instant Effects tab. Unlike image adjustments and Effects menu manipulations, layer effects don't directly change image pixels—they work like mathematical "lenses" that transform how a layer's bitmap appears. Since the settings are independent, you can adjust them *ad infinitum* until you get the result you want! You'll find detailed coverage of layer effects in Chapter 5.

Multiple effects

It's quite possible to apply several effects to the same image, and, depending on the order in which they are applied, to end up with a different final result.

The original image

Blurred by 20
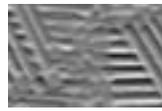
Embossed by 70

Original
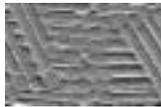
Embossed by 70
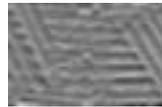
Blurred by 20

HANDS ON: Photo-painting I

This fun project will apply a series of experimental manipulations that make a photograph of a Paris street scene look more like an abstract painting. In the following project you can give the Instant Artist effects a try.

❑   Open the file FRANCE.JPG in the PhotoPlus PROJECTS folder.

❑   To reduce clutter, use the Crop tool to create a new composition as shown in the illustration. This will let you see the results of each filter more clearly.

❑ Choose **Adjust>Brightness and Contrast** from the Image menu and, in the dialog, increase the brightness by 17.

❑ Choose **Blur>Gaussian Blur** from the Effects menu and apply a Gaussian Blur with a Radius of 5.

❑ Choose **Adjust>Posterize…** from the Image menu and apply a posterize value of 13.

❑ Choose **Adjust>Hue, Saturation, Lightness** from the Image menu and boost the saturation to 75.

❑ Choose **Edge>Enhance** from the Effects menu, then **Blur>Blur More** from the Effects menu. Et voilà!

If you try repeating this sequence using adjustment layers for the brightness, posterize, and saturation steps, you'll see that the edge enhancement step, which produced such dramatic results before, is now barely noticeable. That's because it's applied directly to the Background layer, and so changes the actual pixels there *before* the adjustment layer effects are figured in. It doesn't matter that you inserted the adjustment layers earlier: they are still just commands to post-process pixels they find on the layers below. That's a useful concept to keep in mind when

you work with adjustment layers.

HANDS ON: Photo-painting II

Here we'll start with the same source image and see what kind of results
we can achieve with the Instant Artist effects.

❑   Open FRANCE.JPG and again crop the image as shown below. This
time, use **Image/Adjust>Brightness and Contrast** and boost the
Brightness by 10 to improve the tonal range.

It's generally a good idea to optimize the image and clean up any
scratches or noise *before* applying an Instant Artist effect.

❑   Choose **Instant Artist** from the Effects menu and select **Paint and
Ink** in the list. You'll see most of the image in the preview window.
To see a different part of the image, drag with the hand cursor. Click
the Zoom buttons to zoom in or out. This filter really does yield a
nice result instantly, without any additional tweaking! Click **OK** to
see the effect applied to the entire image. (Shown here: Level 5,
Paint Detail 69.)

Now let's get a sense of how much variety is possible within a single
effect.

❑   Use Undo to remove the previously applied effect, and choose
Instant Artist again. This time select **Pointillist** and click the
Advanced button to reveal the full range of settings. Online
help includes detailed coverage of all the parameters, but here's a
quick synopsis. **Dot Size**, amazingly enough, determines the size of
the dots. A lower **Color Jitter** setting yields a closer match between
the brush color and the original image. **Weight** and **Length** both
affect the brush strokes you see, while **Curve** determines how

closely original edges in the picture are followed. **Edge Blur** reduces image detail, while the **Enhance** setting restores detail by enhancing edges. Depending on the settings, you can achieve snappier results, for example, or more/less of a brushed effect. (Here we've used Dot Size 3, Color Jitter 80, Weight 70, Blur 8.)

❑ Keep on experimenting with other Instant Artist effects! Some will work better than others on this particular photo, so you might want to try a different starting image, perhaps one of your own photographs—for example, a portrait, still life, or landscape.

Instant Artist/Oil effect (Brush 6, Accuracy 75)

HANDS ON: Removing Red Eye

Fixing "red eye" in flash photos—the annoying effect which makes people's eyes glow like a zombie—is normally tedious and time-consuming, but PhotoPlus makes it easy with a built-in filter.

We've included a sample file that's ideal for demonstrating the red eye fix.

❑ Open REDEYE.JPG in the PhotoPlus PROJECTS folder.

❑ Choose **Other/Fix Red Eye...** from the Effects menu to open the dialog.

You work on one eye region at a time.

❑ ![Select Area icon] Click the **Select Area** button and then click on the pupil of the left eye.

Immediately, a selection mask (circle) appears around the designated region and the current correction settings are applied there.

The default settings are probably good, but if fine-tuning is needed, adjust the sliders (or enter specific values) as the preview window updates. **Redness Tolerance** (from Loose to Strict) controls how much red is removed. **Blur Amount** (from Hard to Soft) expands the black area to form a bigger pupil.

❑ When the left eye is fixed, repeat the procedure for the right eye, and when you're done, click **OK**. That's all there is to it!

HANDS ON: Antiquing a Photo

This sequence will show you how to make a new color photo look like an old sepia-toned image. The approach here is a bit labor-intensive, but it serves to introduce some new layer techniques—a preview of Chapter 5's in-depth coverage. (For colorizing images quickly, you might also try the Hue/Saturation/Lightness or Channel Mixer adjustments.)

❑ Open the file HOUSE.JPG in the PhotoPlus PROJECTS folder.

❑ Choose **Adjust>Brightness & Contrast...** from the Image menu and increase both the brightness and contrast by 10 to make the picture look a bit faded.

❑ Next, add some grain to the image by choosing **Noise/Add...** from the Effects menu. Increase the value to about 15.

❑ Choose **Adjust>Grayscale** from the Image menu to make the photograph black and white.

To create the sepia look, we will be adding a semi-transparent color layer above the photo.

❑ Choose **New Layer** from the Layers menu. In the dialog, call the new layer "Sepia" and set its Opacity to 40. Leave the Blend Mode at Normal for the time being. Click **OK** and you'll see the new layer's name appear on the Layers tab (although the image won't look any different).

❑ Using the Color tab, set the foreground color to be an orange hue (suggested values: R=255, G=166, B=0).

❑ Select the Flood Fill tool and click on the image to fill the active layer ("Sepia") with the foreground color. (The next chapter will look at fills in more detail.)

Even though the Sepia layer is semi-transparent, its lightness tends to wash out the darker details in the photograph. Here's how changing the layer's **blend mode** can correct that condition.

❑ On the Layers tab, click the drop-down list (now set to "Normal") and choose "Multiply." The result is a new way of combining the Sepia layer's pixels with those below. Multiply always produces a darker value, so the bottom tones in the original picture are preserved.

The last step is to add a simple frame.

❑ On the Color tab, define black as the background color, either by right-clicking in the spectrum or clicking the background swatch and setting its RGB value to "0,0,0."

❑ Choose **Canvas Size...** from the Image menu. Add 40 to each value shown in the Width and Height boxes. Click the center Anchor point so that the existing image will be centered with respect to the edge pixels being added. Click **OK**.
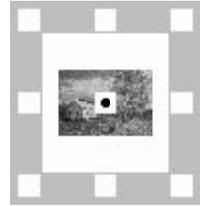
The result? A black border around the sepia-toned photo. If the results don't look quite right to you, feel free to retrace your steps using Undo, and try new toning values, transparency, or canvas adjustments.

Tutorial Resources

For more experience with the tools and techniques covered in this chapter, we recommend these HTML-based tutorials on the PhotoPlus 8.0 Resource CD-ROM:

Try this tutorial...	For practice with these tools and techniques...
Respray	Replace Color filter, Blend Modes
Splash	Adding color to a grayscale image
Canvas	Median Cut, Edge Enhance image filters; Export Optimizer
Meshing Around	Mesh Warp tool
Friendly Nature	Mesh Warp tool's Deform Mesh function, Crop tool
Graduate Scheme	Linear fill editing and applying a Gradient Map
Salvage	Image filters including Blur, Twirl, Edge Enhance, Mosaic, Negative Image

Working with Paint, Shapes, and Text

The previous chapter described a variety of ways of working with existing images—especially photographs, and usually on a single layer. Now it's time to look at creating elements from scratch, using the range of PhotoPlus paint and text tools. Perhaps you need to add text to a photo, along the lines of Chapter 2's "cat" Hands-on Project. Or perhaps you're starting out with a blank canvas and want to try some interesting graphic shapes and color combinations for a logo or custom Web button.

Whatever your creative goals, all of the functions described in this chapter can be applied to photographic images or images opened from file as well as to new work!

Choosing Colors

At any given time, PhotoPlus allows you to work with any two colors— called the **foreground** color and the **background** color. These are always visible as two swatches on the **Color tab**. In this example, the foreground color is set to black and the background color to white. (Don't confuse the "background color" with the "Background layer"—there's absolutely no connection!)
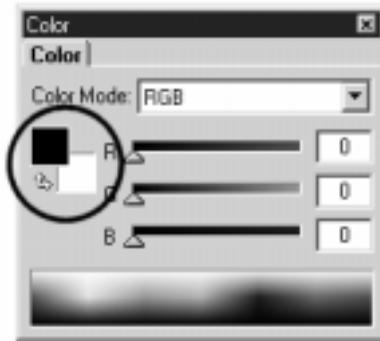
Here are some things to remember about how these colors are used:

♦   Cutting, deleting, or erasing an area on the Background layer exposes the background color. On other layers, removing an area exposes transparency.

♦   To swap foreground and background colors, click the double arrow next to the Color tab swatches.

There are a several simple ways to set the foreground or background color.

One is to use the **Color Pickup tool** on the Tools toolbar. Left-click with the tool anywhere on an image to "pick up" the color at that point as the new foreground color, and right-click to define a new background color. As a shortcut if you're working with one of the drawing tools (paintbrush, line, etc.), you can press the **Alt** key to switch temporarily to the Color Pickup tool. Release the key to switch back once you've left- or right-clicked to make a color selection.

Another way is to use the Color tab. To quickly select foreground or background color, move the mouse pointer (dropper cursor) around the tab's **Color Spectrum**. As you do so, a preview swatch pops up showing the color at the cursor position. Left-click in the spectrum to set a new foreground color, and right-click to set a new background color. As a shortcut for white, drag up and off the top of the spectrum; for black, drag down and off.

Yet another method is to click either the foreground or the background swatch (a white border around either box tells you it's selected), then use the sliders or enter numeric values in the boxes to define a specific color. The selected swatch updates instantly.

Double-clicking either a foreground or background color swatch on the Color tab brings up the more complex **Adjust Color dialog**, which lets you define and store a set of custom colors interactively, using a color wheel. See the "Choosing colors" topic in online help for details.

The Color tab also makes it possible to set the working **color mode** to any one of the following: **RGB** (Red, Green, Blue); **HSL** (Hue, Saturation, Lightness); **CMYK** (Cyan, Magenta, Yellow, Black); or **Grayscale**. (For lots of useful terms and theory relating to color definition and color modes, see Chapter 7.)

HANDS ON: Step into the Sandbox

Our approach in exploring the various painting and drawing tools is going to be decidedly freeform! Rather than prescribe step-by-step sequences, we'll let you follow your own muse as you experiment with each tool. As you read through the descriptions, watch for the checkbox bullets that will offer suggestions. No one is expecting a masterpiece— perhaps just some inspired doodling!

❑ To begin the session, choose **New** from the File menu and (on the Startup Wizard) click **Create New Picture**.

❑ In the New Image dialog, set the image dimensions large enough to give yourself plenty of white space. 500x500 should be about right. Leave the resolution at 96 pixels per inch (that's standard screen resolution). The background type should be set to White.

❑ Click **OK**, and the new image window opens. The image initially has a single Background layer.

❑ Choose **New...** from the Layers menu, then click **OK** in the dialog.

You've just created a new standard (transparent) layer named Layer 1. You'll see its name on the Layers tab, above the Background layer. As we move through the tools, you should try them out on both the Background layer or the standard layer, to see the difference.

❑ To begin with, click "Background" on the Layers tab, so it becomes the **active layer** for painting on.

Painting and Drawing

PhotoPlus's basic tools for painting and drawing are located, like the selection tools, on the Tools toolbar (initially at the left of the main window).

If you wish to display the related online help topic, choose the **Context Help** button and then click the Tools toolbar. (The same goes for any tab or toolbar.)

Note that if there is currently a selection, the brush tool will only work *inside* the selected region. If you try to paint over the edge of a selection, the cursor will continue moving but the line will come to an abrupt halt at the edge of the selection. Or if you've forgotten that there's a selection (perhaps you hid the marquee) and the brush doesn't seem to work— you're probably just painting outside a selected region.

Using the basic Paintbrush tool

The **Paintbrush tool** is used for freehand drawing. Successful freehand drawing requires practice and a steady hand! You might find it easier if you use a graphics tablet, rather than a mouse.

To paint a line using the Paintbrush tool, select it from the Tools toolbar. When you move the Paintbrush tool over the image the cursor will change into a paintbrush.

❑ Select the Paintbrush tool. Left-click and drag to draw a freehand line. Release the mouse button, then repeat to draw more lines.

❑ If you don't like what you drew, press **Ctrl+Z** to undo (but remember, this is all experimental—the more paint you get on the screen, the better!).

❑ Your lines appear in the currently selected foreground color. To paint with the background color, click the arrow on the Color tab to switch the two colors. Now might be a good time to try various techniques for selecting different foreground and background colors, as described earlier in the chapter.

Choosing and customizing brush tips

All of the paint tools work in conjunction with the Brush Tip and/or Tool Properties tabs, so let's see how they work with the basic Paintbrush tool.

Brush Tips determine the basic size and shape of the mark the brush tools make on-screen. The lines you've drawn so far with the Paintbrush tool may be thick or thin, depending which brush is currently selected.
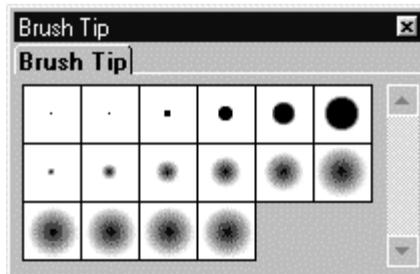
❑ Display the Brush tip tab and note which tip is selected. Click a different one. To draw a "pencil" line, choose a single-pixel brush. (For straight lines, use a guide or the the Straight Outine tool, as described below.)

You'll notice that some brushes have hard edges, while others appear fuzzy, with soft edges. The **hardness** of a brush is expressed as a percentage of its full **diameter**. If less than 100%, the brush has a soft edge region within which the opacity of applied color falls off gradually.

❑ To see what this means, try using a medium-sized hard-edge brush, and then switch to a soft-edge brush. You'll note the difference immediately.

To customize a brush tip's properties, double-click it on the Brush Tip tab (or right-click it and use the popup menu) to open the Brush Options dialog. As you vary the controls, you can see the effect of each change in the preview window. Note there are five brush properties in all. (See the tab's Visual Reference entry in online help for details.)
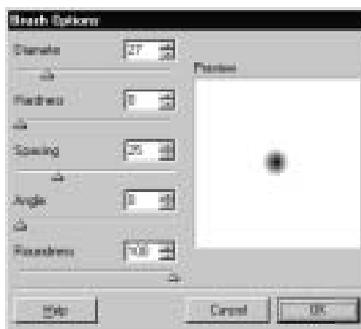
Right-clicking a brush tip's square on the Brush Tip tab provides several other choices, including deleting a brush tip, creating a new one, or importing a Paint Shop Pro **picture tube**. To define a custom brush shape—for example a textured brush or special shape—first select part of the image to be used as a custom brush (for best results, use a solid white background), then right-click on the tab choose **Define**.

Setting tool properties

The **Tool Properties tab** is really an extension of each tool's functionality. Use it to customize the way each tool affects pixels on the screen, and (if you're using a pressure-sensitive drawing tablet) how the tool responds to pressure variations you apply with the pen.
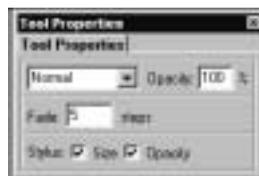
For the basic Paintbrush tool and most other creation tools, you can alter the Blend Mode, Opacity, and number of Fade steps.

♦   **Opacity** is basically the same concept as "transparency"—they're just different ends of the same scale (0% opaque is 100% transparent). Thus a lower opacity value produces paint that's more transparent, with less effect on existing pixels on the layer—more of the underlying paint "shows through." A fully opaque stroke completely replaces all pixels in its path.

♦   **Fade** simulates a realistic brush stroke, with less paint applied over a longer stroke. The more steps, the longer the stroke takes to fade out. For a continuous flow, with no fade-out, use a setting of 0.

♦   **Blend Mode** determines how the pixels the tool lays down interact with pixels already on the layer. It can be a bit complicated, with each mode comparing "old" and "new" pixels in terms of values like hue, lightness, and so on—but see online help's Effects Gallery for illustrations, and Chapter 7 for color theory.

❑   Take a few moments to experiment with varying the opacity and fade settings. With opacity, note how different settings affect the way the foreground color gets painted over existing color.

❑   Click "Layer 1" in the Layers tab and try painting on the upper, transparent layer. Using semi-transparent brush strokes, you'll begin to see how you can combine and overlap colors on different layers.

❑   If you're feeling adventurous, try out some different blend modes—but those are probably best left for more advanced explorations!

If you have a pressure-sensitive stylus, checking the **Size** box causes the brush size to vary according to pressure. A light application of the pen makes for a very thin brush stroke, and full pressure allows the brush size to expand up to the defined size. (If your brush tip is defined as 35 pixels wide, that's how wide it would be at full pressure.) You can also turn on the **Opacity** option so that faint pressure then correlates to a fainter brush stroke.

Using the Airbrush tool

Like the Paintbrush tool, the **Airbrush tool** is used for freehand drawing in the foreground color, but it behaves like a spray-can. Holding the tool over one spot with the left mouse button held down "sprays" more paint.

The choices for Brush Tip and Tool Properties tab settings for the Airbrush are the same as for the Paintbrush. Note that PhotoPlus "remembers" your custom settings for each individual tool.

To paint a line using the Airbrush tool, select it from the Tools toolbar and drag over the image area.

❑ Choose the Airbrush tool and experiment with it, noting how it differs from the Paintbrush.

❑ Try airbrushing on both the Background and the standard (transparent) layer while varying properties, particularly opacity.

Using the Picture Brush tool

The **Picture Brush tool** works like a custom brush that sprays a series of predefined images at regular intervals as you drag. The Brush Tip tab lets you select from a variety of picture brushes in different categories.

❑ Choose the Picture Brush tool and (on the Brush Tip tab) pick a brush tip to try out.

❑ Click in various places on your canvas. Then try dragging in a continuous line.

Note that the tool can be used either to "stamp" single images at specific points—by clicking and releasing the mouse button each time, as in the letter "S" at right—or to lay out a continuous stream of pictures as you drag along a path. Either way, you can scale the size of the elements each brush produces, and control their spacing and sequencing. To do so, select and then right-click a brush name on the Brush Tip tab, and choose **Brush Options**.

The **Spacing** setting determines how closely the elements are packed together when you draw continuously. At the minimum setting of 1%, the brushed line resembles a tube of toothpaste! Higher settings increase the separation between each element.

The **Order** setting controls how the mini-images are laid down. Select **Sequentially** to apply the original element sequence repetitively along the line; **Randomly** to mix up the order of elements; or **By Direction** to place elements according to the line's local slope (in other words, the direction of your stroke determines which sequence appears).

How does the Picture Brush work? Each Picture Brush tip has its own stored master image where mini-images have been arranged in rows and columns. The **Rows** and **Columns** settings tell the tool how to partition each tip's master image—so you should leave these values intact. With a bit of forethought, it's not difficult to lay out your own master images and from them create custom Picture Brush tips. (For details, see online help.)

Using the Eraser tools

Sometimes the rubber end of the pencil can be just as important to an artist as the pointed one. The three **Eraser tools** can replace an existing color either with another color or with degrees of transparency. This review of basic PhotoPlus painting and drawing techniques wouldn't be complete without considering how you can use these three tools—located on the Eraser Tools flyout—to enhance an image.

 The standard **Eraser tool** works very much like the Paintbrush, with the same range of Brush Tip and Tool Properties tab options. But instead, on the Background layer, erased pixels are replaced by (or mixed with) the current background color. On other layers, they are "watered down" by adding transparency.

❑ To erase, select the tool from the flyout and drag over the image area. Try erasing and experiment with varying the Opacity setting on the Tool Properties tab. You'll see that erasing is by no means an all-or-nothing proposition. Some wonderfully creative effects are possible using a semi-transparent eraser to reduce the contribution of existing pixels to the overall image.

❑ Again, switch between the Background and standard layers to compare the results.

The **Background Eraser tool** erases pixels that are similar to a sampled reference color underlying the cursor cross-hair. Hence it's perfect for painting out unwanted background colors. For example, you can use it to isolate objects or people photographed against a studio backdrop. You can select either "Continual" sampling, which updates the reference color as you drag, or "Once," which retains the color sampled at the first click point. The "Edge Detected" setting helps to prevent erasure of similar pixels on the other side of the edge you're tracing. "Background Swatch" detects and erases the current background color.

The **Flood Eraser tool** fills a region with transparency, erasing pixels similar to the color under the cursor when you first click. With both the Flood and Eraser tools, you can select a "Contiguous" effect to erase only pixels in the region around the initial sample point, or switch to a discontigous effect to erase similar pixels anywhere in the image.

❑ Try both tools using different settings. Also, experiment with the Background Eraser's "Edge Detect" setting, which improves erasure on one side of a contrasting edge or line.

❑ By now, you may be getting inspired to create something "interesting" instead of just scribbling. Perhaps it's time to get a beverage, make a few phone calls, and while you're at it (if you haven't already) save this masterpiece-in-progress. We'd suggest SANDBOX.SPP.

Warping, Retouching, and Cloning

In this section we'll look briefly at the three Warp tools (Elastic, Thick/Thin, and Unwarp), the three Retouch tools (Smudge, Blur, and Sharpen), and the Clone tool. These will be useful once you've established the basic elements of an image—perhaps using multiple layers—and are ready to begin removing defects, altering details, and improving the overall image either creatively or technically.

Using the Warp tools

The three entries on the **Warp Tools flyout** work as a group. Two of the tools shift pixels pixels that the brush passes over, while the third undoes the effects of the other two. The actual amount of pixel displacement depends on the direction of brush movement, the brush tip, and the Tool Properties settings.

The **Elastic Warp tool** shifts pixels in the direction of brush motion, hence the appearance of pulling or elasticity.

The **Thick/Thin Warp tool** shifts pixels 90º to the right of the brush direction, which has the effect of spreading or compressing edges along the stroke.

Unlike the Retouch tools, the Warp tools result in little blending or blurring. In fact, their effect is not easy to describe. The images below are magnified views of the two tools in action. Using a hard brush with a diameter of 19 pixels, we dragged straight across a grid of black, single-pixel dots—in one case left to right, in another right to left.
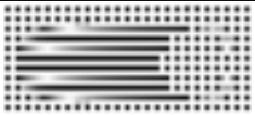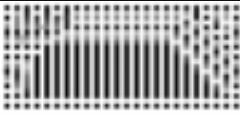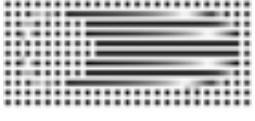
Notice the distinct trails left by the Elastic Warp brush; also note that pixels below the end point of its brush stroke are unaffected. The Thick/Thin Warp effect follows a "right hand rule"—displacing pixels to the right of the drag trajectory. Creatively speaking, if you drag the Thick/Thin tool clockwise, you'll get a concave "pinch" effect, while counter-clockwise motion results in a convex "punch" effect.

You should check out the Image Gallery's before/after examples of these effects—but even better, try them for yourself, using the image we've recommended, or any picture with good detail and contrast.

❑   Open a suitable test image, such as SCORE.JPG in the Projects folder, and experiment with the Warp tools.

The **Unwarp tool** quite simply lives up to its name. Drag the Unwarp brush across a warped region to restore its unwarped state.

Note that Unwarp only works as long as you're still using the Warp tools. Once you select some other tool that's not on the Warp Tools flyout, in effect your "warping session" is over. If you return to the flyout later, it's a new session: Unwarp will reset itself and forget any previous warping. Similarly, PhotoPlus treats all your operations during one warping session as a single, cumulative event; using the Undo command clears the whole session. As a safety measure, you might occasionally switch to a non-Warp tool in the midst of warping, just to record your work up to that point as a separate event.

On the Tool Properties tab, the **Opacity** setting determines the degree of warping or unwarping that takes place. The **Density** setting relates to how carefully each tool calculates new pixel values while you're moving the brush, as opposed to using interpolation to speed things up. A higher Density setting will produce better results on most systems, but try a lower setting if brush movement appears jerky. However powerful your system, it's a good idea to click the **Refine** button when you're done, to update the image using fully recalculated pixel values.

Using the Retouch tools

The Retouch Tools flyout includes three comparatively simple brush tools that are sure to come in handy at various stages of photo editing. Again, you'll find before/after illustrations in the Effects Gallery.

Smudging may sound silly, but the **Smudge tool** can be quite useful for blending pixels the way an artist might hand-blend pastels. Along with the Clone tool (see below), it's useful for blending together separate images in collage work, where seamless stitching is essential.

To use the tool, select it from the Tools toolbar and drag to pick up color from the initial click point and "push" it in the direction of the brush stroke. Short back-and-forth strokes work well to blend edges.

Smudge tool properties are the same as for the Paintbrush and Airbrush, except that there's no Fade setting.

❑ Using an image with multiple lines or sharp edges, try using the tool to smear a line or edge outward, or create a mix of two colors (using a semi-transparent setting). Experiment with the effects of both a hard-edge and a soft-edge brush tip.

❑ For best results when using extended strokes, set the brush tip's
Spacing property to 1.

The **Blur tool** reduces contrast under the brush, softening edges
without smearing colors the way the Smudge tool would. To apply the
same effect to a selected region or the active layer, use the
Image/Blur>Blur... command.

The **Sharpen tool** has the opposite effect, increasing contrast under
the brush to accentuate the appearance of sharpness. Use the
Image/Other>Sharpen... command to sharpen an entire selection or
layer.

Using the Clone tool

The **Clone tool** is one of the most powerful weapons in the
electronic artist's arsenal. Like the preceding
tools, it uses a brush, but it's really like two
magic brushes locked together. While you trace or
"pick up" an original drawing with one brush, the
other draws ("puts down") an exact duplicate
somewhere else. When retouching, for example, you can use the Clone
tool to brush away skin blemishes by cloning some "good skin" over
them, or remove an unwanted object from an image by extending some
foliage to cover it. Or you can easily clone a sheep...

To clone a region, select the tool from the Tools toolbar and set its
properties. Then **Shift**-click where you want to begin copying; we'll call
this the "pickup point." Click and begin dragging somewhere else—even
in another image window—where you want to begin placing the copied
pixels; let's term this the "putdown point." You'll see a crosshair cursor
appear back at the pickup point. As you drag, pixels from the pickup
region are cloned in the putdown region by the tool's brush tip. The
crosshair and brush tip cursors move in sync. The result? A perfect copy.

❑ You really should try this firsthand. Choose the Clone tool and (working on either layer), follow the procedures just described. You'll see the best results if you clone a region that's well painted over, rather than just a thin line. Remember: **Shift**-click to pick up, click and drag to put down. Watch the cursors and what's happening will be evident.

In addition to the usual settings, the Clone tool has an **Aligned** option on the Tool Properties tab. This affects what happens if you use more than one brush stroke. There are two possibilities when you click to begin another stroke, as seen in this example.

Aligned: The pickup point changes, staying a fixed distance from the brush tip on each subsequent stroke.	
Non-aligned: The pickup point stays in the same place on each subsequent stroke.	
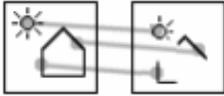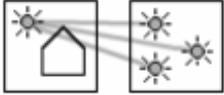
In the first case (called "aligned" because the two cursors remain in alignment), subsequent brush strokes extend the cloned region rather than producing multiple copies. In the second you begin cloning the same pixels all over again from the original pickup point.

❑ Again, experience is the best teacher. Repeat the cloning procedures you tried a moment ago—but this time reverse the **Aligned** setting. You'll see the difference.

Creating and Editing Lines and Shapes

The tools we've described so far in this chapter have been for "pixel pushing"—manipulating the color and/or transparency of the image content on the Background and standard layers. You may recall (from Chapter 2's Key Concepts) that PhotoPlus stores shapes separately, on special layers. It's a key distinction: lines and shapes in PhotoPlus are **vector** objects, as opposed to the **raster** or bitmap content that's stored on the regular pixel-based layers. So now we'll switch from covering the various **painting** tools to a different set of tools, used for **drawing** shapes.

The **QuickShape Tools** flyout features an assortment of tools for creating rectangles, ellipses, polygons, and other shapes.

The tools on the **Outline Tools** flyout let you draw outline shapes: skinny ones that serve as straight lines, plus freehand and curved outlines for variety.

Each of the drawing tools has its own creation and editing rules. Before we get to the differences, let's cover some things that all shape objects have in common. First of all, both QuickShapes and outline shapes occupy special **shape layers**, marked with an $\mathbb{S}$ symbol on the Layers tab. Each shape layer includes a **path thumbnail** representing the shape(s) on that layer. (We'll cover paths in more detail later; every shape has one.)

Path thumbnail selected   **Path thumbnail deselected**

Assuming you're working on a non-shape layer when you create a shape, the new shape appears on a new shape layer. But what about the next shape you create? Shape layers can store more than one shape, and it's up to you where the next one will go. The path thumbnail works like a button that lets you select a shape layer for drawing. If you want to draw the next shape on the same layer, leave the same path thumbnail selected (as at left above). For a shape on a brand new layer, first deselect the active layer's path thumbnail (as at right). Or, to create a shape on a shape layer that already exists, simply activate that layer first.

The four **combination buttons** (■ **Add**, □ **Subtract**, ■ **Intersect**, and ■ **Exclude**) on the Tool Properties tab determine the effect of each new shape-creation operation. For example, starting with an initial square shape, here's what drawing a second such QuickShape might produce with each setting:
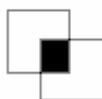
Add   **Subtract**   **Intersect**   **Exclude**

You can alter a shape layer's transparency using the Layers tab, or apply effects like bevel or drop shadow by choosing **Effects...** from the Layers menu. Painting tools and adjustment filters don't work on shape layers; you'll first need to convert the layer to a bitmap layer first (right-click the layer name and choose **Render**).

To align shapes on different layers with each other, first link the layers by clicking their **Link Layer** buttons. Then choose **Align Linked** from the Layers menu. You can choose to align tops, bottoms, edges, and so on.

QuickShapes

QuickShapes in PhotoPlus are pre-designed, filled contours that work just like the Adjustable Selection tools—you can instantly add rectangles, ellipses, polygons, and other shapes to your page, then adjust and vary them using control handles—for innumerable possibilities!

The **QuickShape Tools** flyout contains a wide variety of commonly used shapes, including boxes, ovals, arrows, polygons, and stars. Each shape has its own built-in "intelligent" properties, which you can use to customize the basic shape.

As you draw a QuickShape, it displays as an outline; hold down the **Ctrl** key while drawing to constrain the aspect ratio. Once drawn, the shape takes a Solid fill using the foreground color (see the next section). The active tool switches to the Node Edit tool, and now you can adjust the shape. The number of handles varies according to the shape; for example, the rectangle has just one control, the polygon has two, and the star has four. To adjust a QuickShape, simply drag one of its handles (the tool changes to a "+" when it is above a handle).
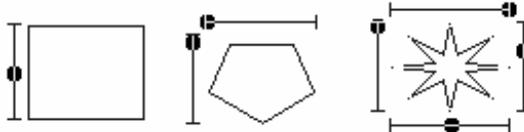
❑ You'll have fun with these! Try building up a pile of shapes, each using a different color with partial transparency so you can see through to the shapes below. Or just play around with QuickShape handles to create zany designs or meaningful symbols. Often, forms like these can communicate quite a lot in a small space—think about the possibilities for Web buttons or icons.

Outline shapes

Earlier we noted that shape layers include a path thumbnail. The "path" is the outline around a shape, and although technically, QuickShapes have paths, too—the three Outline tools are genuine DIY (draw-it-yourself) path-drawing tools.

As we mentioned earlier, a straight line in PhotoPlus is just a very thin shape. To draw one, select the **Straight Outline tool** from the Outline Tools flyout and drag the tool on the image.

Hold down the **Shift** key while dragging to constrain the line to 15° angles.

The Tool Properties tab provides the familiar Blend Mode and Opacity settings for the Line tool. You can also set the **Weight** (thickness) of the drawn line, and turn **Anti-aliasing** on or off. Anti-aliasing produces smooth edges by making the selection's edge pixels semi-transparent. It's great for avoiding "jaggies" on diagonal lines.
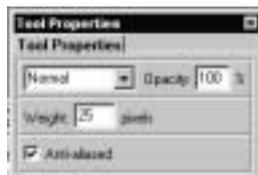
❑   Go ahead and experiment a bit with the Line tool—trying various weights and turning anti-aliasing on and off.

The **Freehand Outline tool**, as its name implies, lets you draw a squiggly line (or a connected series, starting each segment from another's end point), then attach it back to itself to create a closed shape. Simply click and drag! The **Smoothness** setting on Tool Properties evens out ragged contours automatically—useful if your hand shakes.

S The **Curved Outline tool** can produce complex combination curves and shapes in a highly controlled way. After choosing the tool, click and hold down the mouse button. An additional pair of handles appear, defining a pair of red **attractor nodes** that orbit the original click point as you continue to drag the mouse. What these nodes do is define the curvature of the line segment you're about to draw. The distance between attractors determines the depth of the resulting curved line.

Release the mouse button, then click again where you want the first curved segment to end. To extend an existing path, repeat the process for each new end point. As with the Freehand Outline tool, you can connect the curved outline back to its starting point. And you can switch between the two tools to construct a complex outline in a series of segments.
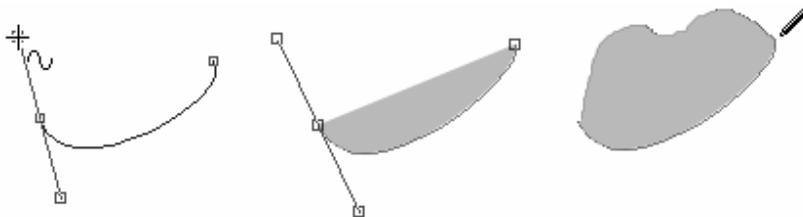
On a shape layer, PhotoPlus needs to treat each path as a closed shape, so if it will automatically add a straight "closing segment" (as in the middle illustration above) even if you haven't joined the two end points. You can either leave the shape that way, or continue to draw segments until you yourself have officially closed it.

Editing shapes

The **Edit Tools** flyout includes two tools custom-made for editing QuickShapes and outline shapes. To edit either kind, first activate its layer and make sure the layer's path thumbnail is selected.

You can use the Move tool to reposition the shapes on a layer as a group, but the **Shape Edit tool** does much more. In fact, it applies the move, resize, scale, skew, and rotation functions of the Deform tool to *individual shapes* on a shape layer. While the Shape Edit tool is active, you can also use the combination buttons on the Tool Properties tab (see above) to reset how a selected shape (other than the first one you created on the layer) interacts with other shapes.

A   **B**   **C**
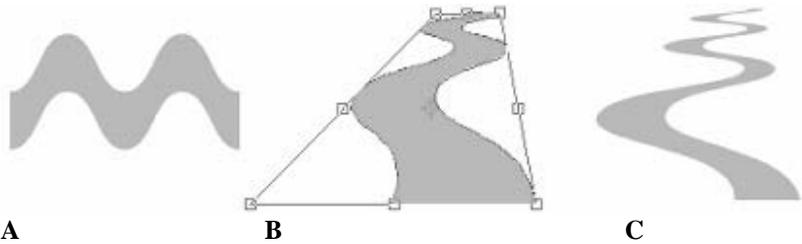
The illustration above shows a cool feature of QuickShapes: you can deform one with the Shape Edit tool (in B, changing A's wave into a "road") and it will still remain adjustable with the **Node Edit tool**! If you look closely at C, you'll note we've added an extra bend to the "road" after the deformation!

Besides being useful with QuickShapes, the Node Edit tool really comes into its own with outline shapes. What is an outline, anyway? It's a collection of **line segments** and **nodes** (points where the line segments meet). There are three different node types (see Chapter 4's discussion of comparable Mesh Warping), and the node type determines the slope and curvature of adjoining segments.

With the Node Edit tool, you can click and drag directly on a line segment, drag one or more individual nodes, or alter the node handles to reshape the outline. To add a new node, double-click on a line segment. To straighten a line, delete a node or change it from one type to another, use the set of buttons on the Tool Properties tab.

❑ Try reshaping, distorting, and rotating all kinds of shapes using the Edit tools. Lots of possibilities arise using shapes with the two fill tools as described next. Hint: Because it's easy to create multiple shapes with subtly different proportions, QuickShapes lend themselves to animation, too. (Chapter 6 has a Hands-on example.)

Filling Regions

The **Fill Tools flyout** on the Tools toolbar includes two tools: **Flood Fill** and **Gradient Fill**. As with the paint tools, if there is a selection, the Fill tools only affect pixels within the selected region. If you're operating on a shape or text layer (see the previous and next sections), a single fill affects the interior of the object(s) on the layer.

The **Flood Fill tool** replaces an existing color region with the foreground color. It works only on standard layers, not with shape or text layers. How large a region is "flooded" with the fill color depends on the difference between the color of the pixel you initially click and the color of surrounding pixels.

You can use the Tool Properties tab to set a **tolerance** value—how much of a color difference the tool looks for. With a low tolerance setting, the tool gives up easily and only fills pixels very close in color to the one you click (a setting of 0 would fill only pixels of the same color; 255 would fill all pixels). As the tolerance increases, so does the tool's effect on pixels further in color from the original pixel, so a larger region is flooded.

Check **Contiguous** to affect only pixels connected to the clicked pixel; uncheck to affect in-range pixels throughout the region. Check **Include Diagonals** for more thorough flooding (more of each pixel's neighbors are taken into account).

To apply a flood fill using the foreground color, select the tool from the flyout, and set tolerance and layer fill options. Then just click with the tool where you want to start the flood!

❑ Try flood-filling some existing color regions in your image.

Whereas solid fills use a single color, all gradient fills in PhotoPlus utilize at least two "key" colors, with a spread of hues in between each key color, creating a "spectrum" effect. You can fine-tune the actual spread of color between pairs of key colors. Likewise, a gradient fill in PhotoPlus can have either solid transparency—one level of opacity, like 50% or 100%, across its entire range—or variable transparency, with at least two "key" opacity levels and a spread of values in between. (Remember that opacity is simply an inverse way of expressing transparency.)

The **Gradient Fill tool** lets you apply *both color and/or transparency fills* directly to a layer. Five types of fill (**Solid, Linear**, **Radial**, **Conical**, and **Square**) are available. Technically, a Solid fill is different (it uses just one color)—but in practice you can also achieve a unicolor effect using a gradient fill.

Solid	Linear	Radial	Conical	Square
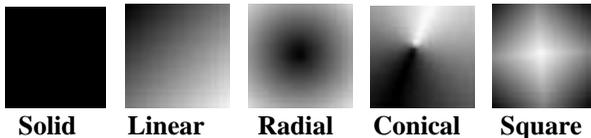
Applying a gradient fill on any kind of layer entails selecting one of the fill types, editing the fill colors and/or transparency, then applying the fill. However, gradient fills behave differently depending on the kind of layer you're working on.

On standard and Background layers, the tool creates a "spectrum" effect, filling the active layer or selection with colors spreading between the current foreground and background colors. The fill is applied rather like a coat of spray paint over existing pixels on the layer; color values in the fill gradient interact with the existing pixels to produce new values. In other words, once you've applied the fill, you can't go back and edit it (except by undoing it and trying again). Transparency works in a comparable way, affecting how much the paint you apply is "thinned." At full opacity, the fill completely obscures pixels underneath.

Because text and shapes are vector objects in PhotoPlus, the Gradient Fill tool is even more powerful on these layers—the fill's color and transparency properties remain editable. Note that the Gradient Fill tool doubles on these layers as a solid fill tool; the Flood Fill tool doesn't work with text or shapes.

When first drawn, a shape takes a Solid fill using the foreground color. To edit the color or switch to a different fill type, either double-click the layer name or choose the Gradient Fill tool and use the Tool Properties tab. Either option lets you choose a fill type, and/or click the color (or gradient) sample to edit the fill. Gradient fills incorporate both color and transparency, and a single fill applies to all the shapes on a particular layer. So if you want to draw a red box and a yellow box, for example, you'll need two shape layers.
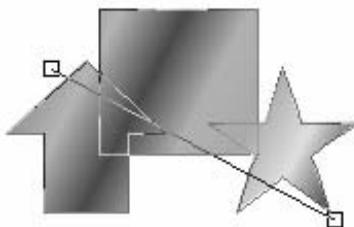
Once you've defined the fill, click with the tool where you want to start the fill and drag to the point where you want it to end. On shape and text layers, the **fill path** (the line in the illustration above) remains visible even after you've applied the fill, and you can adjust the fill's placement after the fact by dragging the fill path's end nodes with the Gradient Fill tool.

Editing a gradient fill

As mentioned above, to define a fill before you apply it, or to change it after the fact on a shape or text layer, you simply click the gradient sample. The PhotoPlus **Gradient dialog** appears whenever you're editing a gradient fill, and lets you adjust the fill's color and/or transparency spreads. Its central feature is a sample window with a spectrum showing both color and transparency. Let's use the gradient shown here as an example:
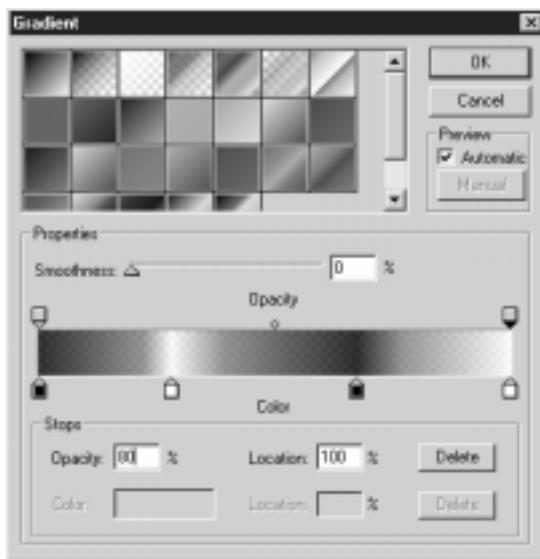
The little house-shaped pointers above and below the spectrum are the key to making changes in the dialog. Each pointer marks a **stop** where a **spread** of either opacity or color begins and ends. To vary the color gradient, you'll use the lower pointers, which show **key colors**. To vary the transparency gradient, you'll work with the upper set of pointers, which use grayscale values to represent key **opacity** levels (white = 100% opaque). In the example shown, the gradient has three color spreads (from blue to yellow, then to blue, then back to yellow), and one opacity spread (actually uniform opacity, with 80% at each end). As you can see, the position of the pointers corresponds to transition points in each gradient.

Whether you're adjusting the fill's color or its opacity properties, the same basic steps are involved. To make life very simple, you can begin by selecting a preset fill from the gallery. Right-click the gallery to select a different category, or add/delete your own fills or categories.

Add item
Delete item

Add category...
Edit category...
Delete category

✔ Default
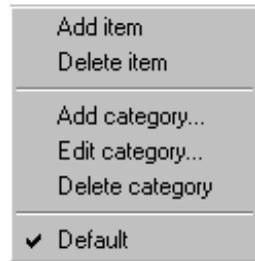
For more complex banding in a gradient, add one or more stops to define new key values and spreads. Click at the position where you want to place the new stop—either just above the spectrum to add a transparency stop or just below it for to add a color stop. A new pointer appears, using an intermediate value. (The tip of a selected pointer is black; unselected pointers have gray tips.)

To change a key color, select its stop and click the **Color** box (or just double-click the pointer) to display the Adjust Color dialog, then select the new color. To change a key opacity value, select the stop and type a percentage into the **Opacity** box. To adjust the length of a spread, move an intermediate stop by dragging its pointer to a new position along the spectrum. You can also select the pointer, then type a number into the **Location** box. To delete a stop you've added, click to select its pointer and click the appropriate **Delete** button (or press the **Delete** key).

The diamond-shaped markers that appear between stops let you adjust the spread of values between the two stops. Initially, values are graduated evenly from one stop to the next. To change the value distribution between adjacent stops, simply drag the intermediate marker. Adjust the **Smoothness** slider for more even transitions between bands in a multicolor fill. Finally, click **OK** to accept changes.

Let's try a mini-project simulating a sphere, using a radial fill inside a circle. First make sure you have some white space (about a square inch should do it) available on the Background layer. Perhaps its time to erase a section, or enlarge the canvas area.

❑ Choose the Ellipse selection tool and **Ctrl**-drag over the white region to create a circular selection about an inch in diameter.

❑ Choose the Gradient Fill tool from the flyout, then select **Radial** as the Fill Type on the Tool Properties tab.

❑ Click inside the selection, near but not at the top left edge, drag diagonally down and to the right across the opposite edge. When you release the mouse button, the selected region takes the fill.
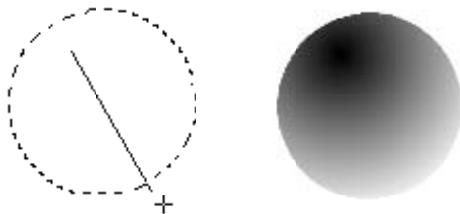
Our "sphere" may not have quite the convincing depth of a 3D model— but it shows how gradient fills can interact with special selection shapes to create unusual effects. Choose the gradient paths carefully so that high and low values fall at specific points inside the selection.

Working with Paths

Paths are basically outlines. As such, every filled shape you draw (see the preceding sections) has a path—namely the outline that defines it. We noted that each shape layer has its own path thumbnail next to the layer name, representing the shape(s) that reside on that layer. But PhotoPlus also lets you work with **independent paths**: outlines that don't reside on any particular layer, but which are created separately and can be applied in various ways to any layer. That's what we'll introduce in this section.

What are paths good for? Consider the precision and editability of vector-based drawing and apply it to the concept of a selection. Now think of all the ways that selections can be used (and reused). In PhotoPlus, selections and paths are interchangeable. And there's more... as you'll see.

The Paths tab provides a special window for working with independent paths.
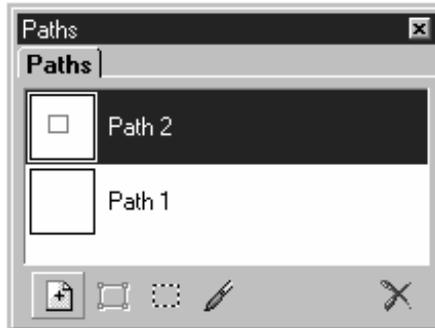
Each path consists of a **path channel**, depicted with its own name, and a **path outline** on that channel. First you create the channel, then you create the outline—either by drawing it from scratch or basing it on the current selection. In the illustration, you can see two path channels and one path outline (shown in Path 2's thumbnail). Once you've got a path outline, you can reshape it with the same Edit tools you'd use for shapes, and convert it to a selection. You can even **stroke** a path—that is, trace it onto a bitmap layer using the current brush. Paths are saved along with the image whenever you use the .SPP format.

To create an empty path channel, display the Paths tab and click the **New Path** button. In the dialog, provide a name for the path, then click **OK**.

To create a path outline, create an empty path channel or select an existing path channel on the Paths tab, then draw a path outline using the QuickShape and/or Outline tools. (See "Creating and editing shapes.")
Alternatively, you can create a path from the current selection simply by clicking the **Selection to Path** button on the Paths tab. This method creates a new path channel automatically and lets you choose a Smoothness setting to even out jagged selections, if you wish. Either way, you'll end up with an unfilled shape on the path channel. To duplicate, delete, or rename a path channel, right-click it and choose from the menu. (You can also double-click a path channel to rename it.)

To edit a path outline, you use the same Node Edit and Shape Edit tools described earlier for shape-editing. With them you can move, resize, reshape, rotate, and skew the path. Since the same tools are used for both independent paths and outline shapes, you'll need to tell PhotoPlus when to switch out of path-editing mode. To exit path-editing mode, deselect the current path on the Paths tab by clicking in the blank space below the path names.

**Click here
to deselect**

Path 1

When deselected, the current path's thumbnail loses its border, and you'll no longer see the path outlines onscreen. Now you can use the editing tools on a shape layer. To re-enter path-editing mode, click a path's thumbnail again.

To create a selection from a path, use the Layers tab to select the target Background or standard layer, and on the Paths tab select the path channel you want to use. Click the **Selection to Path** button. A dialog appears with various options for the new selection: feathering, anti-aliasing, and combination. (Refer to Chapter 3's section on "Making Selections" for details.) Click **OK** and the selection marquee appears on the target layer.

Stroking a path is a convenient way of creating painted lines or unfilled shapes without having to draw them directly. First select the target layer and source path. Choose a brush tool (such as the Paintbrush or Picture Brush) and set Color, Brush Tip, and Tool Properties options. Make sure the path is positioned where you want it, then click the **Stroke Path** button on the Layers tab. That's it!

Before (path)   **After (bitmap)**

Working with Text

Use the **Text Tools flyout** on the Tools toolbar to select from two text tools—one for entering solid, colorful text on a new layer, and the other for creating a selection in the shape of text with which to manipulate content on an existing layer.

A To create new solid text, choose the standard **Text** tool from the flyout. Click with the tool where you want to insert text (it can be moved later). The Add Text window opens.

Type your text and use the formatting options at the top of the dialog. Formatting is applied to all the text in the window, so you don't need to select the text first. To apply semi-transparent edges to the characters, check the **Anti-Alias** box. (Anti-aliasing is generally recommended with text sizes 14pt or larger.)

To set text color, click the **Adjust Color** button and use the dialog. You won't see the effect of the new color until you close the Add Text window. (For details on using the Adjust Color dialog, see the "Choosing colors" topic in online help.)

When you're done, click **OK**. The text appears on a new transparent layer in the image. You can now use the Move tool or other tools and commands to manipulate it, just like the contents of any layer.

The Layers tab designates **text layers** with a $\mathbb{T}$ symbol. Like shapes (as discussed earlier), solid text in PhotoPlus is *editable*: as long as it remains on a separate text layer, you can retype it or change its properties at any time. To edit existing text, either double-click the text layer's name on the Layers tab, or select the layer and—using the standard Text tool—move the cursor over the text until it changes to an I-beam, then click on the text. The Add Text window appears, with the text ready for editing.

In order to keep text editable, only one block of text can occupy a text layer, so various functions—such as paint tools, adjustment filters, or the **Paste Into Layer** command—are disabled on text layers. To convert any text layer to a standard layer, right-click on the layer name and choose **Render** from the menu.

Bonus fonts: PhotoPlus includes a special collection of TrueType fonts! You'll find them on your PhotoPlus CD in the SERIF\FONTS directory.

Text selections work like standard or adjustable selections, except that (you guessed it) they're shaped like text! This opens up a number of creative possibilities, such as using the text selections to "pick up" patterns or filling the region with unusual fills.

To create a text selection, choose the **Text Selection** tool from the Text Tools flyout and click in the image to display the Add Text window. Type your text and apply formatting just as when creating solid text. Click **OK** when you're done. Instead of solid text on a separate layer, you'll see a selection region on the active layer. Now you can cut, copy, move, modify, and apply various effects to it, just as with the other types of selection. (Note that text selections, unlike solid text, cannot be edited with the Add Text window.)

HANDS ON: Creating Filled Text

This sequence shows you how to create some text and fill it with a pattern. One image will serve as a fill for the text created in another.

❑ Open WATER.JPG (our fill image) in the PhotoPlus PROJECTS folder.

Next, create a new empty image to use for the text.

❑ Choose **New** from the File menu to open the New Picture dialog. Make the size 500×100, with a transparent background.

❑ Now choose the Text Selection tool and click it in the new image window to open the Add Text window. Select Cairo SF and 72 points from the formatting options.

❑ Type the word "water" in the box and click **OK** to drop the text on the blank image. Use the Move tool to reposition the selection if necessary.

❑ Now, use **Ctrl+Tab** to go back to WATER.JPG. Select an area from that image and copy the selection to the Clipboard.

❑ Toggle back to the new image and paste the Clipboard contents into the selection by choosing **Paste>Paste into Selection** from the Edit menu.

The final stage is to give the word a drop shadow so that it stands out from the background.

❑ Choose **Effects...** from the Layers menu and check **Drop Shadow**.

❑ Use the controls to adjust the drop shadow's properties, and click **OK** when you're ready to apply the effect.

HANDS ON: Raised Filled Text Effect

This sequence will show you how to create a text effect which looks as if it has been carved in a block of wood.

❑ Open the file WOOD.JPG in the PhotoPlus PROJECTS folder.

❑ Copy the image to the Clipboard so that it will be available to paste in a moment.

❑ Adjust the brightness of the image by choosing **Adjust>Brightness/ Contrast** from the Image menu. Increase the Brightness by 10 but leave the contrast alone.

❑ Next, blur the image by choosing **Blur>Average Blur...** from the
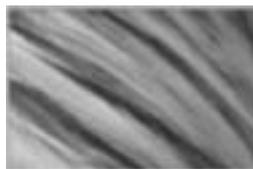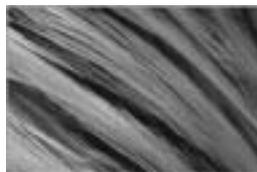
Effects menu and blurring by a value of 4 or so.

These steps will have created a background for the effect. Don't forget to save your work as you go along! The next step is to add some text, which is done on a new layer.

❑ Add the new layer, then choose the Text Selection tool and click on the image to open the Add Text box. Choose Basic Sans Heavy SF and set the size to 72.

❑ Type the text "PhotoPlus" in the box (at least, that's what we typed!) and click **OK** to place the text-shaped selecton on the new layer. Use the Move tool to drag the layer until the selection marquee is positioned centrally.

❑ Choose **Paste>Into Selection** from the Edit menu.
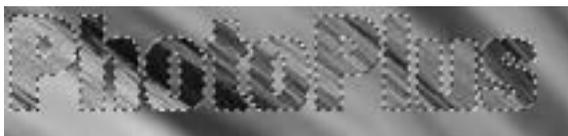
At this point the coloration of the letters closely matches that of the background.

❑ Change the text layer's Blend Mode from **Normal** to **Multiply** using the Layers tab, and the letters will be darker and more visible.

❑ Next, give the text a raised look by choosing **Effects...**from the Layers menu. Check **Bevel and Emboss** and use the dialog to add an Inner or Outer Bevel effect. Adjust the settings to your liking.

You can fill lettering with any bitmap from the Clipboard, and obviously the best way to find out how different fills and effects work is to experiment!

Tutorial Resources

For more experience with the tools and techniques covered in this chapter, we recommend these HTML-based tutorials on the PhotoPlus 8.0 Resource CD-ROM:

Try this tutorial...	For practice with these tools and techniques...
Selection Tools	Basic selection concepts
Exploring Color Spaces	Color Modes: RGB and HSL
PolyDolly	Clone tool basics
Retouching I	Clone tool for stitching images back together
Textraordinaire	Text creation plus Gradient Fill, Paintbrush, Smudge, Blur, Deform tools and various effects
Framed!	QuickShape and Outline Shape tools plus a 3D Effect
Neon Gel	Layer effects and the Curves adjustment on text
Close Encounters of the Curved Kind	Changing tonal qualities with Color Selection Tool, Curves adjustment, adding Lens Flare

5

Using Layers and Masks

Layers

If you're accustomed to thinking of pictures as flat illustrations in books, or photographic prints, the concept of **image layers** may take some getting used to. In fact, layers are hardly unique to electronic images. The emulsion of photographic film has separate layers, each sensitive to a different color—and we've all noticed multiple-image depth effects like shop window reflections or mirrored interiors. There is still something magical about being able to build up an image in a series of planes, like sheets of electronic glass, each of which can vary in transparency and interact with the layers below to produce exciting new images and colors.
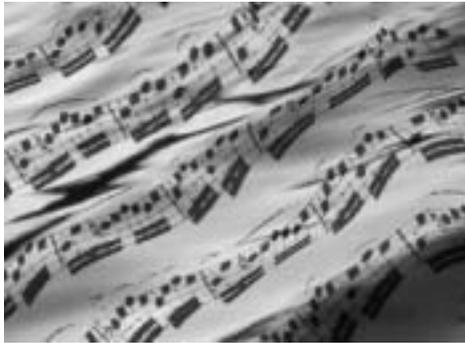
Kinds of layers

In a typical PhotoPlus image—for example, a photograph you've scanned in, a new picture file you've just created, or a standard bitmap file you've opened—there is one layer that behaves like a conventional "flat" image. This is called the **Background layer**, and you can think of it as having paint overlaid on an opaque, solid color surface.

You can create any number of new layers in your image. Each new one appears on top of the rest, comprising a stack of layers that you can view and manipulate with the **Layers tab**. We call these additional layers **standard layers** to differentiate them from the Background layer. Standard layers behave like transparent sheets through which the underlying layers are visible.
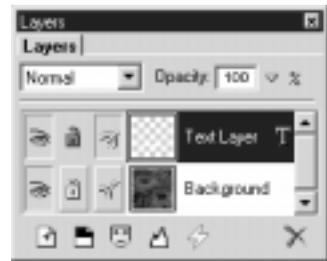
In the previous chapter, we covered **shape layers** and **text layers**, which are specifically designed to keep objects (either shapes or text) separate from the other layers so that they remain editable. Chapter 3 described **adjustment layers**, which apply filter effects to lower layers. Refer back to the earlier sections for coverage of these special-purpose layers—here we are concerned mainly with the Background and standard layers.

A key thing to keep in mind is that pixels on the Background layer, once laid down, are fully opaque, while those on standard layers can vary in opacity (or transparency, which is really the same thing). That's because standard layers have a "master" Opacity setting that you can change at any time, while the Background layer does not. A couple of examples will show how this rule is applied in PhotoPlus:

Suppose you are creating a new picture image. The New Image dialog provides three choices for Background: **White**, **Background Color**, and **Transparent**. If you pick White or Background Color, the Layers tab shows a single layer named "Background." If you pick Transparent, however, the single layer is named "Layer 1"—in this case, the image (typically an animation file) has no Background layer.

 If you cut, delete, or move a selection on the Background layer, the "hole" that's left is filled with the current background color (as shown on the Color tab). The same operations on a standard layer leave a transparent hole.

Many standard operations, such as painting, selecting and moving, Clipboard actions, adjusting colors, applying effects, and so on, are possible on both the Background layer and standard layers.

Others, such as rearranging the order of layers in the stack, setting up different color interactions (blend modes) between layers, varying layer opacity (transparency), masking, or creating animation frames, only work with standard layers.

Once an image has more than just a background layer, the layer information can only be preserved by saving the image in the native PhotoPlus (.SPP) format. Multiple layers are **merged** when you export an image to a standard "flat" bitmap format like .JPG or .BMP. In general, we recommend that you save your work-in-progress as .SPP files, and only export to a different file format as the final step.

Basic layer operations

To select a layer, left- or right-click on its name in the Layers tab. The selected layer is now termed the **active layer**. (Note that "selecting" a layer doesn't imply selecting a region of pixels—that's a separate step, using tools described in Chapter 3.)

To create a new standard layer above the active layer, click the **New Layer** button on the Layers tab. To clone the active layer and its contents as a new standard layer, choose **Duplicate...** from the Layers menu. As a shortcut to either command, you can simply right-click a layer name.

To convert the Background layer to a standard (transparent) layer, right-click "Background" on the Layers tab and choose **Promote to Layer**. The layer's name changes from "Background" to "Layer <number>."

To remove the active layer, click the **Delete** button on the Layers tab. (You can delete the Background layer, as long as it's not the last layer.)

To make a layer's contents visible or invisible, click the **Hide/Show Layer** button next to its name on the Layers tab. The icon switches between an open and closed eye. **Shortcut:** Left- or right-click a hidden layer's name to make the layer visible again.

To prevent further editing of transparent regions on a standard layer, click the **Protect Transparency** button next to its name on the Layers tab.

Note that each layer's entry includes a preview thumbnail, which is visible at all times—especially useful if you're working with many similar layers, image fragments, and/or hidden layers.

Manipulating layers

Control over layers means control over a great variety of creative possibilities. This section will review some of the manipulations you should know about.

Note that commands on the Image and Effects menus, such as color adjustments and special effects, typically are applied to the current selection (if one exists). Otherwise they affect the active layer (the one currently selected in the Layers tab).

Moving the contents of one or more layers

⊕ To move the contents of the entire active layer, make sure nothing is selected, then drag with the **Move tool**. Note that layer content moved in this way outside the image window (canvas area) survives—you can drag it back inside the window later if desired.

⟋ You can **link** one or more layers to the active layer so that when you drag with the Move tool, the contents of all linked layers move together. Click the **Link Layer** button next to the layer's name on the Layers tab. The link button is always "down" (as shown) for the active layer. You can see which others are linked to it by checking to see which other link buttons are also down. Once layers are linked, they remain so regardless of which layer in a linked group is active.

To align linked layers with each other, choose **Align Linked** from the Layers menu, then select **Top**, **Vertical Center**, **Bottom**, **Left**, **Horizontal Center**, or **Right** from the submenu.

To unlink a layer from the active layer, click its link button again (so it's now "up," with an open-link icon).

Clipboard operations involving layers

To copy (or cut) the contents of the entire active layer to the Clipboard, select nothing and use the standard **Ctrl+C** or **Ctrl+X** commands. Cut or deleted pixels are replaced (on the Background layer) with the current background color, or (on standard layers) with transparency.

You can paste the copied or cut layer into another PhotoPlus image window, using the **Paste>As New Layer** command on the Edit menu. Note that text layers become standard layers when pasted.

Rearranging standard layers in the stack

To move a standard layer up or down in the layer stack, click on the layer name in the Layers tab and drag up or down. A black line "drop target" appears between layers as you drag. Drop the layer on a target to relocate it in the stack.

Another method is to select the layer and choose **Arrange** from the Layers menu, then choose one of the following:

Bring to Top
Move Up
Move Down
Send to Bottom

• **Bring to Top** places the layer on the top of the stack.
• **Move Up** moves the layer up one in the stack.
• **Move Down** moves the layer down one in the stack.
• **Send to Bottom** places the layer just above the Background layer (if present) in the stack

Merging layers

Merging layers combines multiple layers into one, decreasing the memory required to store the image. Once layers have been merged, they become a single layer and their previous contents are no longer separately editable.

To merge the active layer with the layer below it, choose **Merge Down** from the Layers menu. To merge just the currently visible layers into a single layer, choose **Merge Visible** from the Layers menu.

To merge all image layers into a single layer, choose **Merge All** from the Layers menu. This is called **flattening** the image because the result is a "flat" file with just a Background layer.

To copy the selection (or image, if there's no selection) to the Clipboard in flattened form without physically merging its layers, choose **Copy Merged** from the Edit menu.

Blend Modes

You can think of **blend modes** as different ways of putting pixels together to create a resulting color. In PhotoPlus, we've already encountered blend modes a property of individual **tools** (Paintbrush, Clone, Eraser, Airbrush, Fill, Smudge, Shape, and Line), where the tool's blend mode determines how new color pixels look when painting on top of existing pixels.

As a property of individual **layers**, a layer's blend mode determines the result of combining each pixel on that layer with those on layers below. (Because there are no layers below the Background layer, it can't have a blend mode.) Note that unlike working with paint tools, changing a layer's blend mode property doesn't actually alter the pixels on the layer. This means you can create different blend mode effects *after* creating the image content, then merge layers (see the previous section) when you've achieved the result you want.

To set a layer's blend mode, select it on the Layers tab and choose from the drop-down list as shown at right.

To learn more about the individual blend modes, choose **Effects Gallery** from the Help menu, then select from the Gallery menu. Each mode is illustrated for quick comparisons, and the listing of modes is cross-referenced to explanatory help topics (just click the green links).

HANDS ON: Making a Montage

Now we'll put several layers from several files together to create one image (in this case an ad for a music event) using a base image, text, and backgrounds. We're going to use an image of a musical score as the main background for our composite.

❑ Open the file SCORE.JPG in the PhotoPlus PROJECTS folder.

❑ Save the image under the name MONTAGE.SPP. This will become the primary working window (we'll refer to it as the "Montage window").

❑ Now open the file PIANO.JPG in the Sample folder. Copy the image to the Clipboard and then close the image window without saving.

❑ In the Montage window, choose **Paste>As New Layer** from the Edit menu to paste the piano image as a new layer (Layer 1).

❑ Choose **Adjust>Hue/Saturation/Lightness...** from the Image menu and boost the layer's Lightness by 25.

❑ Open the file STATUE.JPG in the PROJECTS folder. Carefully select around the statue, using the "Ellipse" Adjustable Selection tool to make a circular selection including just the statue's head.

❑ Copy the selected area to the Clipboard and close the image window. Then in the Montage window, choose **Paste>As New Layer** from the Edit menu to paste another new layer (Layer 2).

❑ Select the Deform tool and drag to enlarge the head slightly, keeping the **Shift** key down to maintain the aspect ratio.

❑ Save the work-in-progress at this point (and every so often for the rest of the project).

Now, we'll add some text.

❑ Make the foreground color red on the Color tab, and then select the Text tool. Click the Text tool on the image, and in the Add Text window type the words "Liberty Concert." Use Basic Sans Heavy SF, 72 points, with centered alignment and a line break after "Liberty." Click **OK** to place the text as a new text layer.

❑ Use the Deform tool to position, resize, and rotate the text on its layer so it is parallel to the piano keys, then choose **Effects...** from the Layers menu and check **Drop Shadow** to add a shadow behind the text.

❑ Select the piano layer (Layer 1) on the Layers tab. Adjust the Opacity for that layer to 75% and set its Blend Mode to Multiply.

❑ On the Color tab, set the foreground color to black and the background color to white. Then choose the Gradient Fill tool and (on the Tool Properties tab) select a Linear fill with both starting and ending Opacity values of 50%. Apply the fill to the piano layer by drawing a path from the top left to the bottom right of the image.

❑ Open MOON.JPG in the PROJECTS folder and use the "Crescent" Adjustable Selection tool to select a portion of the moon.

❑ Copy the selected region to the Clipboard, then close the image window. In the Montage window, choose **Paste>As New Layer** from the Edit menu.

❑ Use the Deform tool to resize and reposition the selection as shown.

❑ Make the foreground color in the Color tab white, and select the Text tool. Add the text "Music By Moonlight" in Basic Sans, bold, size 14 points, on three lines, and drag it next to the crescent moon using the Move tool.

❑ Select the Text tool again, and add the text "Independence Day" in Handscript SF, 24 points. Drag the text to the top of the image using the Move tool.

❑ Add a slight bevel effect to the new layer by choosing **Effects...** from the Layers menu, checking **Bevel and Emboss**, and setting an Outer Bevel... and you're done!

❑ You can save the image as an .SPP if you want to preserve the layers, or choose **Merge All** from the Layers menu to flatten the file and conserve some disk space.

Extracting part of a layer

The **Edit/Extract...** command can speed the task of isolating one portion of a layer. Using the special dialog, you simply brush an outline around the edges of the region you want to extract, then mark a "foreground" area to be retained—usually inside the outline. PhotoPlus applies sophisticated edge detection within the marked edge band, decides which pixels to keep, and turns the rest of the layer transparent, with variable blending along the edge. In preview mode, you can fine-tune and reapply the extraction settings, and manually touch up the image until the result is just right.
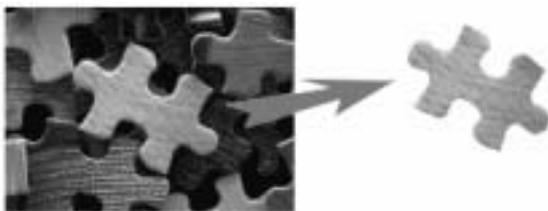
Instead of marking a foreground region, you can designate a specific "key" color to which edge pixels can be compared. Similar pixels will be kept, and dissimilar pixels discarded. (See online help for details.)

Layer Effects

Layer effects are creative effects that you can apply to the contents of standard (transparent) layers, text layers, or shape layers. Standard or **2D** layer effects like shadow, glow, bevel, and emboss are particularly well adapted to text, while **3D** layer effects create the impression of a textured surface. Because the Background layer doesn't support transparency, the effects are not available there. Another thing to keep in mind is that none of the layer effects will "do" anything to an empty layer—you'll need to have some color there to see the difference they make!

For an overview of all the available layer effects, take a look at the **Effects Gallery** in online help. Choose **Effects Gallery...** from the Help menu, or click **Effects Gallery** on the main help Contents menu. You can browse the effects and link directly to details on their respective settings.
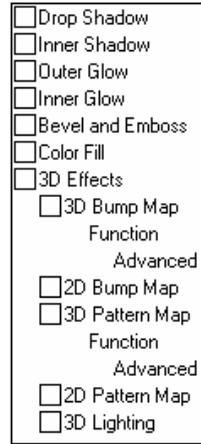
To apply an effect to the active layer, click the **Layer Effects** button on the Layers tab (or choose **Effects...** from the Layers menu). The **Layer Effects dialog** appears, with a branching checklist of available effects. As the checkbox format suggests, you can apply one or more effects to the same layer simply by checking boxes to switch them on individually. Suppose we preview the settings for one of the basic 2D effects, **Drop Shadow**.

As with all the layer effects, you can check the **Automatic** box to preview the effect continually applied to the image as you make adjustments, or uncheck it and click the **Manual** button only when you want to update the preview. You can also choose a **Blend Mode** to determine how the effect's colors interact with image colors, and adjust the various sliders (or enter specific values) to change the total effect. In this particular

dialog, there's also an **Angle** dial that lets you control the direction of the cast shadow, and a **Color** swatch to change the base shadow color. Don't worry—online help includes details on every single layer effect setting!

3D layer effects are just as easy to apply, but they're a bit more complex than their 2D cousins. Actually, there's an easy way to get with them: simply display the **Instant Effects tab** and preview its gallery thumbnails. There you'll see a variety of remarkable 3D surface and texture presets (wood, metal, skin, etc.), all generated with the PhotoPlus engine. Click any thumbnail to apply it to the active layer. Assuming the layer has some color on it to start with, you'll see an instant result!

Depending on the size of your original image and what's depicted in it, you may want to vary the **Scale** slider to reproportion the effect (for example, to achieve a more realistic orange-peel texture). Having applied a preset effect, you can now bring up the Layer Effects dialog and inspect the settings used in the preset. The first thing you'll notice is that the **3D Effects** and **3D Lighting** boxes will always be checked. The master settings of Blur and Depth make a great difference; you can click the "+" button to unlink them for independent adjustment. As for 3D Lighting, without a "light source" switched on, the depth information in the effect wouldn't be visible.

Another thing you'll probably wonder about is that all the 3D effects seem to have "map" in their name. So what is a map, anyway? Actually, it's the key to understanding how these effects work. Let's call it a channel of information overlaid on the image, storing values for each underlying image pixel. You can think of the layer as a picture printed on a flexible sheet, which is flat to start with. Each 3D effect employs a map that interacts with the underlying layer's image to create the impression of a textured surface.

Bump Maps superimpose depth information for a bumpy, peak-and-valley effect. Using the flexible sheet metaphor, the bump map adds up-and-down contours and the image "flexes" along with these bumps, like shrink-wrap, while a light from off to one side accentuates the contours. **Pattern Maps** contribute color variations using a choice of blend modes and opacity, for realistic (or otherworldly!) depictions of wood grain, marbling, and blotches or striations of all kinds.

You'll notice that Bump Maps and Pattern Maps come in two varieties: "2D" and "3D." Don't be misled! These are all three-dimensional effects; the distinction has to do with how each one achieves its result. With the "3D" Bump Maps and Pattern Maps, you first pick a mathematical function. With the "2D" variants, you begin by selecting a bitmap from a gallery. The function-based maps include data about the interior of the "space," while the bitmap-based maps describe only surface characteristics. You'll see the distinction more clearly if you experiment with depth maps, as covered in the next section.

See online help for extended technical coverage of the 3D layer effects. For now, just spend some time playing with them! For an exercise combining layer effects with depth maps, see the "Letters in the Sand" Hands-on Project a few pages on.

Depth Maps

Depth maps let you add remarkable 3D realism to ordinary images, with or without the use of 3D layer effects (as described above). A standard "flat" image, of course, has only two dimensions: X and Y, or width and height. Adding a depth map to a layer gives you an extra channel that stores information for a third (Z-axis or depth) dimension, in effect adding "volume" to the image. It's as if the original image acquires a surface with peaks and valleys—and you can play with the elevation of the landscape to achieve different visual results.

The depth map itself is a grayscale representation that uses lightness values to encode the Z-axis or "elevation" data, with 256 possible levels for each underlying image pixel. Lighter areas represent peaks and darker areas represent valleys. Here's a schematic view of how an imaginary 3D volume (the stack on the left) might be encoded as a depth map:
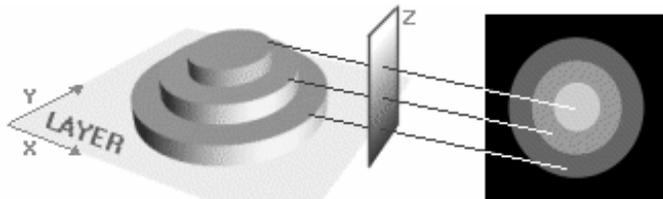
The several levels of elevation on the stack translate or "map" directly to lightness values in the grayscale depth map on the right. What PhotoPlus can do is take the depth map and translate it back into light-and-shadow information that appears (to us) as depth in an image... hence the illusion of three-dimensionality.

Typically, you'll begin by creating a new blank depth map on a layer, then modify it by painting or erasing directly on the map. Changes on the grayscale map layer produce the effect of highs and lows in the "surface."

This kind of grayscale painting is not unlike using Paint to Select mode (see Chapter 3) or working on a mask... only in this case, it's like using a 3D brush! At right, a typical first effort: showing how a solid color layer appears after scrawling in white with a fuzzy brush on the depth map...

So how can you go about creating a depth map? Just activate the layer in the Layers tab and click the **Add Layer Depth Map** button. You'll see a thumbnail of the depth map appear next to the layer name. Initially, the depth map appears solid black, i.e. with zero depth. When you create a depth map, the 3D Effects and 3D Lighting layer effects are switched on by default (so that depth will be visible); the 3D Lighting contributes a bevel effect around the edge, providing initial edge relief. The Colors tab switches to Grayscale mode with White initially the foreground color and Black the background color—and you're ready to go!

The basic way to produce an effect is to paint or erase on the depth map. Painting in a lighter shade adds "highs," while painting in a darker shade adds "lows." The fill and selection tools, work, too! For example, instead of starting with an all-black depth map, you can fill all or part of the depth map with gray to start with, and then use painting or eraser tools.

❑ Try following the steps above and experiment with your own "handwriting" in 3D.

❑ Try using the Text tool to create a selection in the shape of text, then paint inside it.

While working on the layer, you can switch back and forth between the image level, depth map, and (optional) mask by clicking the appropriate thumbnail. You can also switch the depth map off and on to assess its contribution to the image, or subtract it for creative reasons: **Shift**-click its preview thumbnail, next to the layer name.

| **Bitmap selected** | **Depth map selected** |

Once you've gotten the basic idea of 3D-by-painting, you might want to try another way of incorporating depth information: create a suitable bitmap image separately (or borrow one from somewhere else) and then paste it via the Clipboard to an existing PhotoPlus depth map. See online help for the details. And needless to say, you can combine depth maps with 3D layer effects or Instant Effects tab presets to create even more fascinating surfaces and textures.

No question about it: these tools will add a whole new dimension to your artwork!

HANDS ON: Letters in the Sand

In this sequence, we'll create a depth map with the aid of the Inner Shadow layer effect, and then put it to creative use.

❑   Open DESERT.JPG in the PhotoPlus PROJECTS folder.

❑   Select a middle gray (128, 128, 128) as your foreground color. Choose the Text tool and click to display the Add Text dialog.

❑   Using Basic Sans Heavy, type the word "thirst" and set it to 72pt, then click **OK**.

❑   Choose the Deform tool and drag to roughly center the text in the image. Drag from the lower corner nodes to enlarge the text block so it's nearly as wide as the image, and drag from the interior to position the word near the foreground. **Ctrl**-drag from each upper corner node, this time inward so as to add a perspective deformation. Don't worry if a couple of letters get out of position; you'll fix them later.

❑ Choose **Effects...** from the Layers menu and check **Inner Shadow**. Select settings as follows: White as the color, Normal Blend Mode, Opacity 100, Blur 15, Distance 4, Intensity 6. Leave the Angle at 45.

Now for a series of operations to turn the text into a depth map where the darker interior of the letters will subtract depth, while the white edges will serve as the "high ground."

❑ Right-click the text layer and choose **Render** to convert it into a transparent standard layer. If a couple of letters are mis-aligned, now's the time to use the Freehand Selection tool and drag them (kicking and screaming) into position. We couldn't have done this, of course, as long as the letters were still on a text layer. Your layer structure should now look like this:

❑ To create a depth map, we need an image layer that supports transparency, so right-click the Background layer and choose **Promote to Layer**.

❑ Click the **New Layer** button to create a new layer between the two existing ones. Select White as the foreground color and use the Flood Fill tool to fill this new layer.

❑ Activate the "thirst" layer and choose **Merge Down** from the Layers menu. Now the layer structure should appear as below, and we're ready to create the depth map.

❑ On Layer 2, press **Ctrl**-A to Select All, and then click the layer's **Hide/Show Layer** button so all you see is Layer 1.

❑ With Layer 1 activated, click the **Add Layer Depth Map** button. We're still in Select All mode with the new map now selected, so choose **Paste>Into Selection** from the Edit menu. You'll see an instant transformation! What started as a text layer has been converted to grayscale variations on the depth map.

❑ Initially the effect will appear extremely blurry, but a few adjustments will fix that. Click the layer's **Layer Effects** button and adjust the linked **Blur** and **Depth** settings for 3D Effects to 10. For 3D Lighting, drag the **Specular** slider to 0 to remove the highlight reflections—out of place on sandy terrain. You might also adjust the **Elevation** value to 50.

❑ For a clearer visual statement, we moved the sandy region up to cover the mountains and create a higher horizon line:

Masks

Masking in a program like PhotoPlus is a wee bit more complicated than applying masking tape to the screen! But fundamentally the concept is the same: you can hide certain parts of an image—in this case by rendering them transparent, hence invisible. To do that, you create a **mask** on a non-Background layer. You can also use a mask with an adjustment layer, too—to restrict the effect to certain regions.

By changing the grayscale values on the mask (using the paint tools and other devices), you can effect corresponding changes in the opacity of the underlying layer's pixels. For example, by "blacking out" on the mask, you render the layer's underlying pixels transparent, and they disappear from the image. On an adjustment layer, blacking out hides the adjustment's effect. And because you're working with 256 levels of gray (i.e. opacity), tremendous variations are achievable.
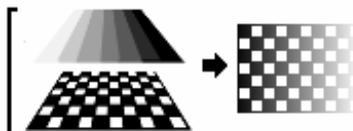
Besides the creative possibilities, ranging from vignetting to multi-layer montage to gradient masking and beyond, a great feature of working on a mask is that it is "temporary"—if you don't like the way things are going, you can abandon your changes and start over without ever having affected the actual pixels on the layer!

Each non-Background layer can have one mask at any given time. (The Background layer can't have one because it doesn't support transparency.) Mask information, like layer information, can only be preserved by saving the image in the native PhotoPlus (.SPP) format.

Mask-making

Here are the three basic steps in using a mask:

1   Create the mask on a layer.

2   Edit the mask itself to "preview" changes to the layer.

3   Merge the mask with the layer to make the changes permanent, or delete the mask without applying changes.

Let's take these in turn. (The description assumes you're working with a standard layer, but the procedures are similar for adjustment layers.)

1 Creating the Mask

Before you can use a mask, you have to create it on a particular layer. The mask can start out as all transparent (revealing the whole layer) or all opaque (hiding the whole layer)—or you can create a mask from a selection, in which case part of the mask will be transparent and the rest opaque. The choice depends on how you want to work with the layer's contents. By darkening portions of a clear mask, you can selectively fade underlying layer pixels. By lightening an opaque mask, you selectively reveal layer pixels.

To create a mask, first select the layer where you want to create the mask, and select specific region(s) if desired. Choose **Add Mask** from the Layers menu and then one of the following from the submenu:

- **Reveal All** for a transparent mask over the whole layer
- **Hide All** for an opaque mask over the whole layer
- **Reveal Selection** for an opaque mask with transparent "holes" over the selected region(s)
- **Hide Selection** for a transparent mask with opaque "blocks" over the selected region(s)

 You can also click the layer's **Add Layer Mask** button to create a Reveal All mask (or Reveal Selection if there is one).

On the Layers tab, a mask preview thumbnail appears, confirming that a mask exists.

2 Editing on the Mask

In Edit Mask mode, you can use the full range of painting tools, selection options, and effects to alter the mask's grayscale values. These manipulations cause corresponding changes in opacity, which in turn changes the appearance of the pixels on the layer itself.

Remember, as long as you are editing the mask, you're only seeing a preview of changes on the layer. No permanent changes will be applied until you actually merge the mask with the layer.
You can switch out of Edit Mask mode at any time to work directly on the layer (or any other part of the image), then switch back to resume work on the mask.

To edit the active layer's mask, click the mask preview thumbnail, or check **Edit Mask** on the Layers menu. (Click the layer's bitmap thumbnail or uncheck the menu item to switch out of Edit Mask mode.) The Color tab switches to Grayscale mode when you're editing a mask,

and reverts to the previous setting when you exit Edit Mask mode. This means anything you paste from the Clipboard onto the mask will automatically be converted to grayscale. The image window's titlebar shows "[MASK]," indicating that a mask is currently being edited.

In Edit Mask mode, you're normally viewing not the mask, but rather the effects of changes "as if" you were making them on the layer below. Adding a Reveal All mask can be a bit confusing, because there's initially no evidence the mask is there at all (i.e. the layer appears exactly the same as it did before you added the mask)! It's sometimes helpful to switch on the **View Mask** setting (**Alt**-click the mask preview thumbnail,

or use the Layers menu), which hides the layer and lets you see only the mask, in all its black, white, or grayscale glory. For example, a Reveal All mask appears pure white in View Mask mode (as at right). This represents a clear mask with no effect on the underlying pixels' opacity.

View Mask can also be useful in the latter stages of working on a mask, to locate any small regions that may have escaped your attention.

You can **disable** the mask (**Shift**-click the mask preview thumbnail or check **Disable Mask** on the Layers menu) to see how the layer looks without the mask's effects. Note that disabling the mask is not the same as cancelling Edit Mask mode—it only affects your view of the layer, not which plane (i.e. mask or layer) you're working on. When the mask is disabled, a red "X" appears across its thumbnail.

You can also **create a selection** directly from the mask by selecting its preview thumbnail and choosing **Create from Mask** from the Select menu. Within the resulting selection, pixels that are lighter on the mask (conferring more opacity) become relatively more selected. This correlates with Paint to Select mode (see Chapter 3), where painting in lighter tones also confers "selectedness."

3 Applying changes to the layer

Once you're satisfied with the appearance of the layer as seen with the mask enabled, you can choose **Merge Mask** from the Layers menu to make the changes permanent.

Of course, you may choose to **delete** the mask (choose **Delete Mask** from the Layers menu) without applying changes... perhaps to try again. In either case, whether merged or deleted, the old mask is no longer present and the layer is ready to accept a new mask.

Merging masks reduces clutter and file size, but note that the effects of masking appear in exported images whether or not you've merged masks.

HANDS ON: Vignetting

❑ Open BRIDGE.JPG in the PhotoPlus PROJECTS folder.

❑ Right-click the Background layer and choose **Promote to Layer**. Now that the layer (renamed "Layer 1") is transparent, we can make a mask on it.

❑ Select the "Ellipse" Adjustable Selection tool and drag out an elliptical selection on the image. Move the selection marquee if necessary so that the bridge is exactly centered within it, and double-click to confirm your selection.

The region within the oval selection is our area of interest. To create a vignette effect—a gradual fade-in from the edges—we'll want to make the pixels at the edge transparent, grading in to opaque pixels in the part of the picture we want to keep. **Feathering** the selection will produce this effect.

Feathering proceeds outwards from the edges of a selection, so to feather within the region we've defined, we'll first contract the selection and then feather out from there.

❑ Choose **Modify>Contract...** from the Select menu, and type in 20 as the number of pixels. Click **OK**.

❑ Now choose **Modify>Feather...** from the Select menu, and again enter 20.

There's no immediately visible effect on the image, but we *have* altered the selection, as you'll see...

❑ Choose **Add Mask>Reveal Selection** from the Layers menu.

Right away the effect of the mask created from the selection becomes clear—literally! The gray-and-white checkerboard pattern shows the transparent regions of this single-layer image. Feathering has produced a gradation of opacity.

❑ Merge the mask with the underlying layer by choosing **Merge Mask** from the Layers menu.

Now let's put a mat around the image.

❑ Choose **New...** from the Layers menu and click **OK** to create a new layer.

❑ On the Layers tab, drag the new layer down below the first one so that it's on the bottom. (You still won't see any change in the image.) Make the new bottom layer the active layer, and press **Ctrl+D** to remove the selection (if there still is one).

❑ Pick a neutral beige or pastel foreground color, and click with the Flood Fill tool on the active bottom layer.

❑ As a finishing touch, you can drag the "bridge" layer slightly with the Move tool to center it with respect to the mat.

❑ You can now save the image as an .SPP, export it to another format, print it, or perform more manipulations.

Tutorial Resources

For more experience with the tools and techniques covered in this chapter, we recommend these HTML-based tutorials on the PhotoPlus 8.0 Resource CD-ROM. All involve working with multiple layers:

Try this tutorial...	For practice with these tools and techniques...
Giraffic Park	Extract command, working between two images
Giraffic Park 2	Adding shadows, reflection, and more with the Deform tool, Crop tool, layer duplication and flipping, custom selections with feathering and layer opacity
Tantastic	Retouching and a photo frame, using Clone tool, Replace Color filter, layers
Holidays	Extract command to transform a group picture into an array of "fakes"
Rollin'!	Combining images using Clone tool, Deform tool, optional masking, layer transparency, Blur tool
Shut It Down!	A custom Windows shutdown screen using Deform tool, Flood Fill tool, Text, Layer Effects, Resize filter and Export Optimizer.
Vectoriffic	Adding dimensionality with QuickShapes, gradient fills, transparency
Criminal Intent	Depth map fingerprint on a square of "chocolate"
Instant Artistry	Oil effect applied to a photo

6

Preparing Web Graphics

One of the main uses for PhotoPlus is to produce graphics for use on the World Wide Web. This chapter looks at the prevalent Web graphics file formats, techniques for creating and editing animations, and two specialized techniques (image slicing and image maps) used to extend the performance of Web images.

"Performance" may seem like an odd aspect of graphic design, but it's actually one of the key factors in designing for the Web. Among other things, it means load time: how long it takes for your whole page, including text and graphics, to display completely in a Web browser. In practice, it's hard to measure. Things like connection bandwidth, server speed, and modem rating all play a part.

Load time is a function of the total size of all the page objects that need to load; and graphics usually take up the lion's share. Is there anything you can do to reduce the total size of your graphics, aside from using fewer graphics? An obvious suggestion is not to make them any larger than they need to be to get your point across. Since file size increases as the square of each dimension, shrinking both height and width by half reduces the file size by 75%.

The PhotoPlus **Export Optimizer** will greatly help you in reducing file sizes as far as possible while maintaining image quality. For related background material, be sure to consult the "Color concepts" and "Optimizing images" sections of Chapter 7.

Formats for the Web

Here are some general notes on the principal file formats used for Web pictures and animation—.GIF, .JPG, and .PNG—and details on the options you'll encounter in the PhotoPlus Export Optimizer.

❑ The details will make a lot more sense if you have the Export Optimizer open. Try using Double or Quad view (see Chapter 3) for side-by-side quality comparisons at different settings.

.GIF format

The .GIF (Graphics Interchange Format) file format is universally supported in Web browsers for both static and animated Web graphics. It's a **lossless** format (there's no image degradation) with excellent compression but a limitation of 256 colors. Use it for non-photographic images with sharp edges and geometrics—for example buttons, bursts, decorative elements, and text graphics. It's suitable for grayscale photos as well.

The .GIF format supports binary transparency. That is, any portion of the image may be either fully opaque or fully transparent. Typically, this is used to eliminate the box-shaped frame around the graphic that would otherwise be present. Elements with rounded edges, such as characters or shapes, preserve their contours over any background color or pattern.

If you're producing transparent GIFs, try to avoid **anti-aliasing** and **feathering** (i.e. turn them off in the Tool Properties tab). The semi-transparency these functions impart may look fine in PhotoPlus, but remember that .GIF wants "all or nothing." Pixels that aren't 100% transparent will end up opaque, and the exported graphic will display sharp or even ragged edges when viewed over a Web page background.

GIF is also a multi-part format, which means one file can store multiple images. As such, it's the preferred format for Web animations.

Recommended .GIF export settings

Format (Bits per pixel, Number of colors): 8-bit (256 colors) is the only available setting for animations, and the maximum supported by the format. For pictures, **4-bit** (16-color) and **1-bit** (2-color) exports are also possible.

Dithering (None, Ordered, Error diffusion): Dithering schemes substitute pixel patterns for original colors to preserve apparent coloration when the actual number of colors in the image is being reduced. Choose **Ordered** (not available for animations) for a more regular dot pattern, and **Error diffusion** for a more adaptive dot pattern.

Palette (Web-safe, Optimized): Choose **Optimized** to let the PhotoPlus export filter determine the best colors to apply, but without regard for standard colors. Choose **Web-safe** to reduce the colors to only those found in the 216-color palette used by Web browsers. This will ensure that an image you place on a Web page won't change its appearance when viewed by users of most other systems or browsers.

GIF Options (Transparent, Interlaced): .GIF files support **transparency**—one reason they're commonly used over backgrounds on Web pages. PhotoPlus gives you the option of exporting GIFs with or without a transparent background. Check **Transparent** to turn clear "checkerboard" regions of your graphic (those with no pixels or 0% opacity) into transparent regions in the GIF. All other regions will become opaque. If unchecked, transparent regions will become white. Check **Interlaced** to use an image format that will display "progressively" in a browser: first a low-quality image will display, followed by an improved image as the complete GIF is loaded.

.JPG format

The **.JPG** or **JPEG** (Joint Photographic Experts Group) file format, like .GIF, is universally supported in Web browsers. Unlike .GIF, it encodes 24-bit images and is a **lossy** format (i.e. it discards some image information) with variable compression settings. JPG is clearly the format of choice for full-color photographic images. For "black and white" (256-level, 8-bit grayscale) photos, it has no particular advantages over .GIF.

The unique aspect of exporting as a JPG is in fact the slider control you use to choose one setting from 10 possible levels. At one end of the scale, the export applies maximum compression and produces an extremely small (but quite ugly) image. At the other end, there is effectively no loss of quality, but file sizes are relatively much larger, although still compact compared to BMPs, for example.

When choosing a quality setting for .JPG export, keep in mind the number of times you expect to be re-exporting a particular image. A photograph may look fine in the Export Optimizer the first time you export it at .JPG level 6, but after several such saves, you'll really see a cumulative quality loss .

.PNG format

For Web graphics, the newer **.PNG** (Portable Network Graphics, pronounced "ping") format has a number of advantages over .GIF—the main ones, from an artist's perspective, being "lossless" 24-bit images and support for variable transparency. Whereas .GIF supports simple binary ("on-off") transparency, .PNG allows up to 254 levels of partial transparency for normal images. The image file includes an "alpha channel" that directs pixels in the foreground image to merge with those in a background image. Most commonly used with 24-bit images, anti-aliasing creates the illusion of smooth curves by varying pixel colors-—for rounded images that look good against any background, not just against a white background. It's especially useful for the small graphics commonly used on Web pages, such as bullets and fancy text.

Photo images included on the PhotoPlus Resource CD-ROM) are stored in .PNG format.

HANDS ON: Making A Web Button

Making labeled buttons is a typical use for text in PhotoPlus. Here, we're going to make a simple "Stop sign" button.

The first step is to create a basic Background layer for the button.

❑   Choose **New...** from the File menu, or click the **New** button on the Standard toolbar. (Then if the Startup Wizard is enabled, click on **Create New Picture**.)

❑   In the New Image dialog, set the size to 600×600 pixels and specify a white background.

This is much larger than the finished button will be, when saved as a .GIF file, but it is much easier to work on a larger image. We'll resize it just before exporting as a .GIF.

❑   Click **OK** to create an empty image with a layer called "Background."

❑   Before going any further, choose **Save As...** from the File menu and save the image as BUTTON.SPP.

The next step is to fill the background with a plain color.

❑   Select a light blue foreground color from the Colors tab (we suggest R=168, G=245, B=255).

❑   Select the Flood Fill tool from the Tools toolbar and click on the image to fill with the foreground color.

Now we'll add a bevel effect to make the image look like a button. You can't apply Layer effects to the Background layer, so right-click on "Background" on the Layers tab and choose **Promote to Layer**.

❑ Choose **Effects…** from the Layers menu and check **Bevel and Emboss**, then set an outer bevel. Bearing in mind that the image will eventually be reduced in size considerably, increase the Opacity to 90 and the Blur to 20.

Next, we'll add a graphical element. We'll put this on its own layer, so we need to add a new layer.

❑ On the Layers tab, right-click on "Layer 1" and choose **New…**. In the dialog, name the layer "Shape."

❑ Change the foreground color to deep red, then select the Polygon tool from the QuickShape Tools flyout.

❑ Draw a polygon shape. Adjust the left handle so the shape is octagonal, with eight sides, and drag the top handle to rotate the figure into a "stop sign" orientation. Then double-click inside the figure to complete drawing the shape.

❑ Choose **Effects…** from the Layers menu and check **Bevel and Emboss**, and this time set an outer bevel with Opacity 75 and Blur 5.

Next, select White as the foreground color.

❑ Select the Text tool and click it on the image. In the Add Text window, type the word "STOP" and format it as Arial, Bold, 72 points.

❑ Use the Deform tool to shrink or expand the word so it fills the center of the octagon. (Or you can click the text with the Text tool and use the Add Text box to adjust the pointsize.)

Finally, we'll resize the image to a more suitable size for a Web button.

❑ To preserve the proportions of the bevel effect, choose **Merge All** from the Layers menu before resizing.

❑ Choose **Image Size…** from the Image menu and resize the image to 50×50 pixels.

❑ Finally, choose **Export Optimizer…** from the File menu and export the image as a .GIF after checking the options.

Producing Web Animations

Animation creates an illusion of motion or change by displaying a series of still pictures, rapidly enough to fool the eye—or more accurately, the brain. With PhotoPlus, it's easy to create and edit images with multiple frames, then export them as animated GIFs that a Web browser can play back. You use exactly the same tools and interface as for creating standard, multi-layer PhotoPlus images, with an extra tab window that includes all the additional controls you need to set up frames, add special effects, and preview the animation. Once you're satisfied, use the Export Optimizer to output to the .GIF file format.

The **.GIF** format is what makes Web animation possible, for a couple of reasons. First, it's universally supported by Web browsers. Second, it's a multi-part format, capable of encoding not just one image but multiple images in the same file. A GIF animation player or Web browser can display these images in sequence, in accordance with certain settings (looping, frame delay, etc.) included in the file. The result—it moves!

PhotoPlus gives you the choice of either creating your animations from scratch, then exporting to .GIF, or starting out by importing a .GIF animation and then editing it. Either way, once PhotoPlus detects an animation file, it switches on the Animation tab. If the image file is new, you'll see a single, blank frame, labeled "Frame 1." If you've imported an animation, the tab displays each frame separately. Animation files can have one layer, or many (see below), but all their layers are standard (transparent) layers; there's no Background layer. (If you need to brush up on the concept of layers, see Chapter 5.)

Layers and frames

Animations are defined by the **Animation tab** working together with the **Layers tab**. Let's look at a little animated GIF of a rotating spiral.

❑ Open the file SWIRL1.GIF in the PhotoPlus PROJECTS folder. When the image opens, the Animation tab appears.
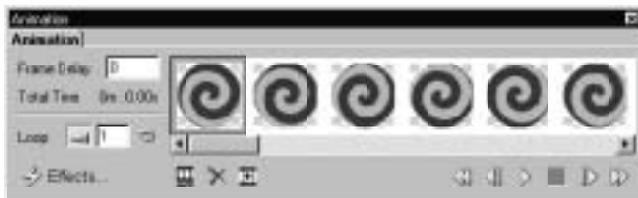
Notice the playback control buttons on the right, below the frames.

❑   Click the ![Play] **Play** button to preview the animation, and click
     ![Stop] **Stop** to freeze it. Try the other playback buttons, while you're at
     it!

To display the Visual Reference topic describing the various features of the
Animation tab, click the ![info] button and then click anywhere on the tab.

Let's examine the Swirl animation more closely. In this file (as in any
imported GIF animation) the individual frames each have been assigned
one layer in the PhotoPlus image.

On the Layers tab, the layer stack for this
animation corresponds nicely with the frame
sequence, with default names—in this case,
"Frame 1 of 6" through "Frame 6 of 6."

❑   Select Frame 1 on the Animation tab.

Notice that on the Layers tab only the "Frame
1" layer is marked as shown, with an open-eye
button; the other layers are all hidden, with
closed-eye buttons.
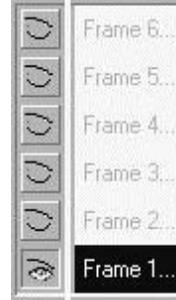
❑   Now select Frame 2 on the Animation tab.

This time, only the "Frame 2" layer will be shown, and the rest will be
hidden. And so on with the other frames.

The above example, with its one-to-one correspondence between frames
and layers, is easy to grasp but deceptively simple. Don't make the
mistake of thinking that a "frame" is just another name for a "layer."
Frames in PhotoPlus are actually much more versatile!

Key point: A so-called "frame" is really just a particular state or
snapshot of the various layers in the image, in terms of three layer
properties:

   1   Shown/Hidden: Which layers are shown and which are hidden

   2   Position: The position of the contents of each "shown" layer

   3   Opacity: The opacity setting of each "shown" layer

As you switch between frames, you are switching between states of the
image. In the simple example above, the six frames define six states in
terms of Property 1—each of the six frames defines a different layer as
"shown." We could rearrange the stacking order of the layers, or rename
them—and the animation itself wouldn't change.

Thus, when you create a new frame on the Animation tab, you're not adding a new layer. The new frame merely enables you to define a new state of the layers that already exist. Of course, you *could* go on and create an additional layer, but then all your frames would need to take that layer into account—in other words, hide it when it wasn't needed.

HANDS ON: Follow the Bouncing Ball

To demonstrate single-layer animation, let's create an example with a bouncing ball—created with four frames but on *just one layer*. In this animation, the four frames will define four states in terms of Property 2—the position of the layer contents.

❑ Close the Swirl animation window (we're done with it). To begin creating a new animation, choose **New…** from the File menu. If the Startup Wizard is enabled, click on **Create New Animation** to open the New Image dialog. You'll notice that the **Animation** option box is checked.

❑ Specify dimensions (100x100 is fine), set the Background to "Transparent," and click **OK**.

A new, untitled image window will open, and the Animation tab will now something look like this:

❑ For this project, make sure the **Endless Loop** button is down. The **Show/Hide Captions** button should be up (captions hidden) so that each frame's image content is easier to see.

❑ Working in the image window, choose the "Ellipse" Shape tool and **Ctrl**-drag to draw a small, dark circle at the left side of the square canvas. (The color doesn't matter, as long as it shows up.) The new shape appears on its own layer.
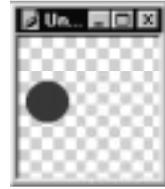
❑ Now click the ⬛ **New Frame** button on the Animation tab three times to add three clones of Frame 1.
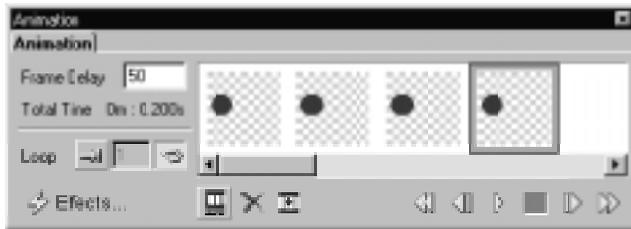
❑ On the Animation tab, click on the second dot (Frame 2) to select it. In the image window, choose the Move tool and (with nothing selected) drag the whole layer so the ball is now at the top of the canvas. When you release the mouse, you'll see Frame 2 on the Animation tab update to show the new "state" of the image.

❑ Click Frame 3 and drag the layer so the ball is at the right of the window, and finally in Frame 4 put the ball at the bottom of the window. The Animation tab will show the four frames like this:
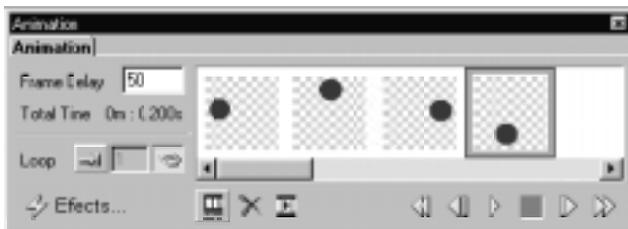
❑ Click the 🔼 **Play** button. Not bad for a few minutes' work!

❑ If the animation runs too fast, you can increase the frame delay. Each frame has its own delay factor, but here's how to set one factor for all frames. Just click all four frames while holding down the **Shift** key (that selects them all), then enter the new number in the Frame Delay box. Try playing the animation again.

❑ Click the **Fixed Loop** button and try entering a specific number of repeats in the box. (The most common setting here would be "1," for example with a longer sequence that only needed to play once.)

❑ We suggest that besides saving your creation as an .SPP file, you also export it as a .GIF. You'll notice that the Export Optimizer has a special tab for previewing and setting final animation options before exporting to the .GIF format. On the Optimizer's main Options tab, you can check or uncheck the Transparent box. Since this little example has only an opaque dot on a clear background, it should export well as a transparent animation.

❑ You can also choose **Preview in Browser** from the File menu to preview your animation in your Web browser.

We'll leave it to you to create another example, varying only opacity on a single layer, perhaps some text (like "CLICK HERE") blinking on and off. Two frames could accomplish that—in one, the layer set to 0% opacity, and in the other, to 100%.

Notes on animation

♦ In practice, you can use one, two, or even all three of the layer properties when creating a given piece of animation. Just remember that a separate layer is only required for each element that moves independently, or each differently-drawn state of a given element. An element that doesn't change its shape or color, but merely moves about or changes opacity (appears or disappears), can be animated on a single layer.

♦ With a little forethought and sketching, you can figure out in advance how many layers you'll need. Then you can set up the image with the right number of layers to begin with.

♦ To preserve layer properties, be sure to save the image in the native PhotoPlus (.SPP) format. You can reopen an image you've exported as a GIF, but it will have lost PhotoPlus layer properties like opacity and position.

♦ Although .SPP animations and .SPP pictures share the same file extension, there's no direct conversion option—a file either has animation properties, or it doesn't. To convert an .SPP picture file to an animation, or extract a single frame from an animation to a picture, first create a new image window and then use conventional copy/paste commands to copy elements and/or layers from one file to the other.

♦ Use animations sparingly on Web pages. Like all attention grabbers, they can lose their impact if overused. Also, animated .GIFs (because of the additional image information) are substantially larger than a static graphics, a consideration if you expect people to view your pages over a slow Internet connection.

♦   PhotoPlus also lets you export animations to the .AVI movie format
    (for details, search "AVI" in the online help Index). AVIs are
    suitable for specialized multimedia work, but are neither compact nor
    universal enough for general use on Web pages.

Animation effects

You can turn a variety of PhotoPlus effects (as illustrated in the Effects
Gallery, plus **Fade** and **Move**) into animated transition sequences. The
process "in-betweens" or "morphs" a layer from a designated starting
frame to some end-state over a specified number of frames, creating one
new layer per frame. If you like, you can select a "Ping Pong" option that
includes a reverse transition so the final frame looks just like the first one.

The Fade effect steps the opacity of each frame in the sequence up or
down between the Start and End values, for a fade-in or fade-out. The
Move effect displaces the contents of the frame in a straight line between
designated Start and End positions. Note that objects on text or shape
layers can only use the Fade and Move effects. To use text or shapes with
one of the other animation effects, first merge the layer into a standard
layer, or convert it to a standard layer by right-clicking on the layer name
and choosing **Render** from the menu.

You can either have PhotoPlus create a sequence of new frames for the
effect (check **Create as new frames**) or you can create some empty
frames yourself and then generate the effect with the **Create as new
frames** option unchecked. This will integrate the new layers into the
existing blank frames, beginning with the designated Start frame.

As a simple example, we'll create a line that wriggles.

HANDS ON: Making Waves

❑   Create a new, transparent animation about 600×75 pixels.

❑   In the first frame, use the Line tool to draw a long, thick line the
    whole width of the image.

❑   Click **Effects...** on the Animation tab.

❑   Choose **Wave Filter** from the Effects list to open the Wave Filter
    controls.
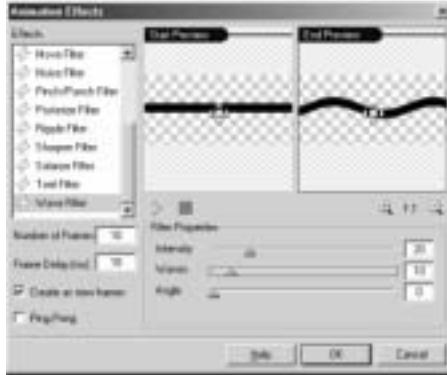
The dialog has two preview windows, the left-hand one for the Start and the other for the End state of the transition. You can apply effect settings to either or both states. We're going to leave the straight line to start with, define a wavy line as the end state, and have the animation cycle back to the starting line.

- ❑ Click the right-hand (End Preview) window.

- ❑ Set the **Intensity** slider to 20, and **Waves** to 10. As starting values, use "10" for the number of frames and also for the frame delay. Check both the **Create as new frames** and **Ping Pong** boxes. The dialog has its own **Play** and **Stop** buttons so you can preview the effect in the End window.

- ❑ Click **OK** to create the effect. PhotoPlus adds one new layer to the image for each new frame. Click the **Play** button and you'll see the animation unwind in the image window.

- ❑ Now you can save, export, and/or preview the sequence in a browser.

Image Slicing

Image slicing and **image maps** are two convenient ways to create navigation bars and clickable graphics for Web pages. With image slicing, a graphic is carved up into smaller graphics—each of which can have its own link, like any Web graphic—and PhotoPlus saves the sections as separate files when you export the image. The process also exports HTML tags describing a table containing the separate graphics, allowing a Web browser to reassemble them seamlessly. The result appears as a single larger graphic, but with different regions linked to different targets.

For example, this menubar graphic...

Home Updates Products Links

...can be sliced into four separate graphics, each linked to a different Web page.

Home | Updates | Products | Links

The Image Slice tool lets you divide the image into sections, which can be exported using the .GIF or .JPG format. You can specify alternate text and URL links for each of the image sections individually.

Slicing an image

The **Image Slice tool** looks like a small, black-handled knife. When it is selected, the cursor also changes to a small knife.

To slice an image horizontally (left to right) select the image slice tool and left-click on the image. **Shift**-click to slice an image vertically (top to bottom). Repeat as many times as necessary. Each click inserts a red slice guide. You can move a guide up or down by dragging it, or delete a guide by dragging it out of the image window.

To specify the alternate text and/or URL link for an image slice, right-click it and enter the information into the dialog, then click **OK**.

When exporting a sliced image, check the **Create Image Slices** box on the Export dialog. Specify a name and folder for the files as usual, and choose either .GIF or .JPG as the export file type. We recommend using .GIF for non-photographic images and .JPG for photo-quality images.

This will create multiple files in the specified folder, depending on how many slices you have defined. There will be a series of image files (for example, MYFILEH0V0.GIF, MYFILEH0V1.GIF, etc.) and a single HTML file (for example, MYFILE.HTM). The HTML file contains the tags for the set of image slices, ready to be pasted into the source code for the Web page.

Image Maps

Whereas image slicing subdivides an entire graphic into smaller graphics and exports them separately, image maps consist of **hotspots** that you draw with special tools over selected parts of an image. When a visitor passes their mouse cursor over the hotspot, a small caption is displayed and the pointer will change to a pointing hand. Clicking the mouse while the cursor is over the hotspot will invoke a hyperlink to a specified URL.

You assign each hotspot its own target—for example, the URL of a Web page. Hotspots aren't attached to a particular image, but become part of a larger "map" that gets exported along with an image and turns into HTML code. It's then up to you or your Web developer to embed the image map code properly into the Web page.

Creating image maps by hand can be difficult and time-consuming, but PhotoPlus makes it easy. The **Image Map Tools** flyout on the Standard toolbar displays a flyout menu of tools for creating and editing image maps.

There are four image map tools:

♦   The **Selection** tool, used to modify the area drawn with one of the other tools and to actually set the image map properties;

♦   The **Rectangle** tool, used to draw a rectangular hotspot;

♦   The **Circle** tool, used to draw a circular hotspot;

♦   The **Polygon** tool, used to draw a polygonal hotspot.

Creating hotspots

To begin, click the **Image Map Tools** flyout and choose the **Rectangle**, **Ellipse**, or **Polygon** tool. Use the tool to draw a hotspot on the active layer. To draw a polygon, drag and release the mouse button to define each line segment; double-click to close the polygon. Hotspot outlines appear in red.

To edit a hotspot, click the **Image Map Tools** flyout and choose the **Selection** tool. To resize the hotspot, drag from an edge. To move the hotspot, drag from the center. Right-click the hotspot with the Selection tool to delete it, set layer options, or access hotspot properties.

In the Image Map dialog, enter the text which will pop up when the cursor moves over the hotspot, and the full URL for the hotspot to link to. Previously-used URLs are saved and can be selected from the drop-down list by clicking on the arrow at the end of the box.

Normally you will export the image for which you have created the image map as a .GIF (for non-photographic images) or a .JPG (for photographic images). We recommend that you use the Export Optimizer (choose **Export Optimizer...** from the File menu) to compare the quality and file size which results from various settings.

Make sure that the **Create HTML for Image Maps** box is checked in the Export dialog, then click **Save**. This will create identically named .HTM and image files. The HTML file contains the tags for the image map, ready to be pasted into the source code for the Web page.

If you're looking for a powerful yet easy-to-use tool for Web page design, look no further than **Serif PagePlus**, which lets you create your own Web site from scratch or with Web Page Wizards (using its Design CD-ROM). PagePlus enables effortless, WYSIWYG Web page design—and you can incorporate the animations, sliced images, and image maps you've created with PhotoPlus.

Tutorial Resources

For more experience with the tools and techniques covered in this chapter, we recommend these HTML-based tutorials on the PhotoPlus 8.0 Resource CD-ROM:

Try this tutorial...	For practice with these tools and techniques...
Statuesque	Instant Effects, Mesh Warp tool to create an animation
Buttonflies	Multi-layer graphical buttons using QuickShapes, Image Browser, Image Slice, Image Map tools

Color and Input/Output Options

This chapter ties together a variety of loose ends... mindful of the fact that every PhotoPlus user will arrive with different needs and prior experience. The other Companion chapters focus on step-by-step procedures to build familiarity with tools and functions. Much of the important theory that underlies the program's workings has had to take a back seat.

As you read through the topics here—all dealing in one way or another with different ways of representing pictures as on-screen bits and bytes—you'll realize how indispensable these underlying concepts are. Although this is the final chapter, it can make a good starting point, too.

Color Concepts

It's always difficult to draw a line between concepts you should understand before you get started, and those that can wait until you absolutely need them. Here we've collected a few key terms and concepts relating to color, and presented them roughly in order of priority, trying to keep it simple without oversimplifying. So we suggest you just begin at the beginning, and treat this as a reference section you can revisit at any time.

Bitmaps

First of all, PhotoPlus is all of the following things and more: a "photo editor," a "paint program," a "bitmap editor." It lets you create manipulate images called "bitmaps," "paint-type" images," or "raster graphics." Don't be overwhelmed by the jargon—all these terms communicate a single concept! **Bitmaps** (let's settle on that term) are digital pictures (which may or may not be photographs) represented by lots of colored dots ("pixels") on a computer screen ("raster"). You create these images by "painting" or filling in regions on the screen, regions that can be as small as a single pixel or as large as the whole screen (or larger).

Bit depth

A bitmap is basically a bunch (literally a "map") of numbers that tell each dot (pixel) on a computer monitor what color it should be. And since computer numbers consist of binary digits (1's and 0's, or "bits"), each pixel in effect has one or more bits backing it up, telling it what to do. From this fact arises the concept of **bit depth** (also known as "pixel depth"), one of the essential attributes of any bitmapped image. Bitmaps not only have height and width, they have depth. The more bits assigned to each pixel, the more possible color states the pixel can be told to take—the greater its "color depth."

For example: If you're only using 1 bit per pixel, the pixel can only be ON or OFF, in other words "1" or "0," the two states of the bit—hence white or black (**monochrome**). By comparison, a bit depth of 4 bits per pixel can store 16 values; 8 bits per pixel, 256, and so on. 16-bit images have roughly "thousands" of values to describe each pixel's color, and 24-bit images have "millions." Not surprisingly, the file size of an image is basically the product of its linear dimensions (number of pixels) times its bit depth, so a picture saved as a 24-bit image would take up three times as much disk space as an 8-bit version.
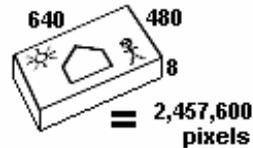
Of course, the appearance of a bitmap on a screen depends not only on the bit depth of the picture but on that of the computer screen displaying it. Just a few years ago (in the "old days"), many monitors were limited to 16 colors, and 256 was a big deal. There were "VGA" and "SVGA," and today the choices include "High Color" (16 bit) and "True Color."

Just because you may have a higher-end system, don't forget that many others do not. A 24-bit image with millions of colors may look abysmal on a 256-color monitor—a key consideration when it comes to creating graphics for the Web, as opposed to CMYK separations for a print publication. In print publishing, designers must worry about whether the colors specified in their electronic images will produce "true" output when reproduced in ink, under standard lighting conditions. In Web or CD-ROM publishing, the main worry is how to **optimize** or reduce the file size as far as possible, while maintaining some semblance of quality in the image (more about optimizing below). Fortunately, PhotoPlus includes tools to support all these needs.

Bit depth in PhotoPlus

One of the main differences between PhotoPlus and most other paint programs is that we've put aside the restrictive notion of working with a limited number of colors. You can work on any image in 24-bit mode, accessing the full color spectrum via the Color tab. Native format (.SPP) images are stored in this mode. When and if the time comes to save in a different format, and reduce colors, PhotoPlus provides the Export Optimizer for maximum quality control.

While novices will appreciate the ease of use this approach brings, more experienced users may at first need to adjust to the absence of color swatches and the constraints of working in 256-color mode. Still, we're confident that the benefits of concentrating on image production first, and color reduction last, will soon become apparent!

Tip: You can use the Open dialog to peruse images on your system one at a time, or the Image Browser to display a folder-full of thumbnails at a time. The Open dialog gives the bit depth and dimensions of each image, while the browser shows dimensions (plus additional file data if you right-click a thumbnail and choose **Information...**).

Resolution

Bitmaps are created at a fixed **resolution**, measured in **dpi** (dots per inch) and hence lose quality if resized upwards. Resizing downwards is a different matter, which is why it's always a good idea to scan pictures at higher dpi settings and scale down later (see the "Scanning Tips" section later in this chapter). The reproduction quality of bitmaps can vary dramatically, and depends on factors such as the dpi stored in the original file, the dpi used for reproduction (printing), the bit depth, and the scaling factor used in reproduction.

High resolution bitmaps compensate for quality problems, but tend to be very large files.

Color modes

The PhotoPlus Color tab includes a control that lets you select one of four **color modes**: RGB, CMYK, HSL, or Grayscale. You should know something about these modes, even if you only have occasion to work in one or two of them. Much of the terminology overlaps. Let's consider these, starting with the simplest.

A **grayscale** image looks like what we would call a "black and white" photograph, which properly speaking has many levels of black and white (not just two, as in a monochrome line drawing). On computers, Grayscale mode stores 256 shades of gray or levels of lightness. A value of 0 represents pure black, a value of 255 pure white. Sometimes we speak of the "tones" in a grayscale image—it's just another word for the different "values" or "lightness levels."

To understand **HSL**, imagine the difference between watching a TV program on a black and white set as opposed to a color set. It's the same color signal, right? But the black and white set doesn't reproduce the color. What it does pick up is the grayscale or lightness channel of the signal. In the same way, any color image in PhotoPlus has a channel that stores lightness information. The "L" in HSL stands for **Lightness**. To repeat—and this is important when it comes to understanding topics like masking and blend modes—lightness and grayscale values (and for that matter tones, luminance, and brightness) all refer to the same thing.

The additional **Hue** and **Saturation** channels in HSL mode together store the color information that's missing from a simple grayscale image. Like Lightness/Grayscale values, Hue and Saturation channel values are expressed in numbers, ranging from 0 to 255. (If you're alert, you'll note that 256 is equivalent to 8 bits of information, so H+S+L has three 8-bit channels totalling 24 bits—which is where the "24" in "24-bit" comes from.

Hue refers to the color's tint—what most of us think of as rainbow or spectrum colors with name associations, like "blue" or "magenta." A **color wheel** (like the one in the PhotoPlus Adjust Color dialog) is useful for representing the spectrum of hues as a continuous cycle, like a clock. The hue "red" is arbitrarily assigned the value 0 at a certain position, and the values run around the circle. **Saturation** describes the color's purity—a totally unsaturated image has only grays.
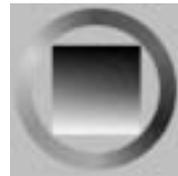
RGB mode is much less intuitive than HSL as a method of mixing colors, but it's the standard way of describing colors the way they're displayed on computer monitors—as mixtures of separate Red, Green, and Blue components. Anyone who's seen (in school, perhaps) a demonstration of three projector beams in a dark room, one of each color, merging to produce a pool of white light, has seen a primitive version of the RGB system. Turn all the elements off and you get black. On computers, as with the HSL system, 8 bits are used to encode each of the three channels, for a total of 24 bits, and with 256 possible levels (0-255) for each channel. An RGB value of "0,0,0" represents pure black, while a value of "255,255,255" represents pure white.

To quickly get a feel for the HSL and RGB color mode variables, double-click either the foreground or background color swatch on the Color tab and try mixing your own colors using the Adjust Color dialog. (See online help for details.)

Finally, **CMYK** is a color model used for preparing printed work, where ink on paper is the medium that determines color reproduction. It's based on the "subtractive" principle by which our perception of a pigment's color depends on the light wavelengths it absorbs and reflects. Traditional process color printing creates colors by mixing inks and absorbing light, so that your eyes can mix the reflected light.

The four process inks are Cyan, Magenta, Yellow, and Black (Black is referred to as Key). Mix the four process inks, and you get black. No ink gives you white (or the color of the paper). In PhotoPlus, the C, M, Y, and K channel values are given as percentages, from 0 to 100%. PhotoPlus supports CMYK output of process color separations (see the section later in this chapter).

Color mode tips

♦ The color mode setting (on the Color tab) determines how image data gets pasted from the Windows Clipboard—in other words, as grayscale values in Grayscale mode, or as full 24-bit color in any of the other modes.

♦ If you start editing a layer mask (which represents opacity values by shades of gray), the Color tab switches temporarily to Grayscale mode. Applying the **Image/Adjust/Grayscale** filter or equivalent adjustment layer, however, doesn't affect the color mode.

♦   You can use the Color Pickup tool as a probe to read component values in an image. Move the tool around the image and watch the HintLine. Depending on the color mode, you'll see a readout of values (R, G, B, H, S, L, O, etc.) under the current cursor position. By the way, the "O" represents Opacity.

Optimizing Images

In a perfect world, there would be just one digital picture format that everybody used. Infinite storage capacity and bandwidth would allow full-color images to be stored and transmitted instantly, uncompressed... but let's leave that for a sci-fi novel! The reality is that at least hundreds of picture formats have been created, with more ever on the way. A dozen or so are currently in widespread use among computer professionals. The tradeoff between image quality and file size will remain a fact of life. Hence the need to **optimize images**—that is, achieve the best quality in the least file size, and within whatever other contstraints (such as number of colors) the job may impose.

PhotoPlus features a powerful **Export Optimizer** (introduced in Chapter 2) that serves as your "command center" for exporting images to various formats. It not only provides a variety of options for each supported format, but lets you compare image quality using different settings and even retains your preferred settings for each format. You can access the Export Optimizer at any time—not just at export time—to take advantage of its compararison capabilities. While the visual comparisons speak for themselves, some of the available settings may need some explanation.

Palettes

The PhotoPlus Export Optimizer offers two standard **Palette** options when you export using 8 bits or less. A color palette (no relation to a "floating" palette) is a table of color values that gets stored with any image having 256 colors or less. This could mean a .BMP, .GIF, .PCX, or .WMF image—plus quite a few more. Computer users with high-color monitors may not give it much thought, but in the realm of 256-color displays, palettes can make a great deal of difference. Windows itself reserves "slots" for its own "system" colors, and each application must "declare" a palette while the graphics system tries to ensure peaceful coexistence. When several colorful applications are in use, and you switch from one you another, you sometimes see the ghastly result of palettes clashing as neither application wants to relinquish its hold on a scarce system resource.

To avoid that kind of calamity when displaying Web pages, both Netscape and Microsoft browsers use the same **Web-safe** palette of 216 colors to display images. Since you've gotten this far, you may be interested to know that the Web-safe palette is based on *RGB values that are either 0, or divisible by 51*. Permissible values are in the series 0, 51, 102, 153, 204, 255. So, for example, the RGB definition "0,102,51" would be a safe Web color, while "0,102,52" would not.

If you're exporting at 256 colors or less, and Web display is not an issue, there's no question you should choose the **Optimized** setting—as a quick side-by-side comparison in the preview window will always confirm. The program will always do a better job when it's allowed to select a range of color values that best match those in the 24-bit version, rather than having to apply the same 216 colors every time.

Note: When you open an image that already has an associated palette, PhotoPlus doesn't attempt to hold on to the palette—it always re-optimizes, even if you use the **Save Original** command. Usually this yields the best possible results; but if keeping exactly the same image palette is essential to your particular application, our advice would be to export from PhotoPlus in 24-bit mode and use a third-party program to apply the palette.

Dithering

Dithering (not to be confused with "showing flustered excitement or fear") comes into play with images being reduced to 256 colors or less. It's a method of approximating colors outside the actual image palette—for example, by alternating pixels of red and blue from within the palette to produce the visual impression of a purple color that's not in the palette. Applications (including Web browsers) use dithering in 256-color mode if the images being displayed include colors outside the application palette. This can degrade solid-color areas and is one of the main reasons to export Web-bound images using the Web-safe palette.

When you're exporting to 256 colors or less, PhotoPlus lets you choose whether or not to use dithering. If you have an image with few colors, and preserving areas of solid color is essential, you should opt for *no dithering*—and the export filter will pick "nearest-match" color values from the palette being applied. You may see some color shifting, but the solid color areas will be preserved. For photographic images, on the other hand, dithering is clearly the best choice. With the "optimized palette" option, you can choose either **ordered** or **error diffusion** dithering. The former produces a discernably patterned effect, while the latter tends to average away the patterns for a more natural result.

Compression

Compression schemes, which apply different algorithms to encode the image information with fewer total bits and bytes, are used in many formats. With some, like .BMP and .TIF, the Export Optimizer gives you a choice of compression scheme. In general, use the default setting unless you know for a fact that some other scheme is called for.

The .JPG format, widely used for photographs (and detailed in Chapter 6), is unusual in that you can set the level of quality desired using a slider. As you might expect, the highest-quality setting uses least compression, with no loss of image quality but the largest file size. The lowest-quality setting applies maximum compression for smallest size, but yields rather poor quality. With the aid of the Export Optimizer, you can judge for yourself—but another factor to keep in mind is the number of times you expect to be re-exporting a particular image. A photograph may look fine the first time you export it at JPG level 6, but after several such saves, you'll really see the quality loss. As a rule, keep images in the native .SPP format, or export them using only lossless compression schemes, until it's time for the final export.

File Formats

PhotoPlus can import and export most types of graphics file which you're likely to encounter. In order to use PhotoPlus images in other programs, you will have to export them into one of the widely used formats.

For pictures and animations intended for use on the World Wide Web, the two prevalent formats are .GIF (for both) and .JPG (just for photos). A newer format, .PNG, affords excellent compression and variable transparency but older browsers may not support it. See Chapter 6 for details on Web format features and options. (PhotoPlus also lets you export animations to the .AVI movie format.)

For print use, we recommend that you use .TIF or .BMP as most other programs allow you to import files in that format.
If you're exporting an image so that it can be used in four-color process printing, be sure to enable the CMYK option in the Export Optimizer. The other export formats use the RGB color model (see the section on "Color modes" earlier in this chapter), which is not suitable for use in process printing.

The .WMF metafile format used by Windows can include bitmap data, vector data, or both (in vector images the picture is stored compactly as a set of lines). To generate vector information for scalable images you can work with in a draw program, choose the **Autotraced Metafile** export option (available only as an add-on with the PhotoPlus Resource CD-ROM). PhotoPlus processes the image and includes traced vector data in the output file.

Tips for Scanning

Scanning hardware and software varies considerably. One myth is that the higher the resolution of your scanner, the better results you'll achieve. While that's true in theory, the real limit to quality is how the image will ultimately be reproduced. Will it end up on the printed page or on-screen? Either way, the real issue is how many "extra pixels" you'll need in the original scan.

If the image will be professionally printed, will that be onto a sheet of newsprint or a glossy coated stock? Paper itself puts a ceiling on reproduction quality. Lower-grade paper tends to spread ink around more easily, so the dots of ink used to print a picture need to be larger. This means a wider **halftone screen** with fewer **lines per inch** (lpi).

If you'll generate your output on a desktop printer, the device will be putting bits of toner or droplets of ink on the paper. On a laser printer, shades of gray result from variations in toner coverage. Desktop color printers create color by laying down dots of cyan, magenta, yellow, and black ink. Again, printer resolution and paper type are quite variable. Dpi (**dots per inch**) is the most common measure of print quality. But the lines per inch, based on halftone reproduction, is equally useful. A print resolution of 600 dpi corresponds to about 100 lpi.

♦ As a general rule, the optimal scanning resolution for print work (in dpi) is about one-third the dpi setting (i.e. twice the resultant lpi) on the printer or other device that will be used. 200 dpi scanning is fine for most printed output

Or will your image end up on-screen instead of in print? If so, it will no doubt be viewed at standard **screen resolution** of 96 dpi. (That's why this is the default resolution in PhotoPlus.) If you're producing Web images, it makes more sense to regard resolution as a fixed factor, and think in terms of image dimensions instead.

This means that, for an image that will end up on a Web page, it's just possible you can get great results scanning at 100dpi, at exactly the screen dimensions you need. But that's cutting it close, especially if you'll be editing the image at all.

For either print or screen images, you must always take into account what kinds of manipulations you plan to carry out on the image in your photo editor, i.e. PhotoPlus. Color adjustments, resizing (with resampling), blurring, and other effects tend to disturb the arrangement of pixels in the original scanned image. So let's add another guideline:

♦   If preserving detail is a consideration—as it almost always is—and you plan to manipulate the image, then give yourself enough pixels to work with! Scan at a higher resolution (or higher size) and scale the image down later.

Of course, file size and the capacity of your system are also factors in choosing scanner settings. It makes little sense to work slowly on a 20MB file, if you'd get the same final quality working quickly with a 5MB file.

Depending on your scanner software, your may be able to perform initial adjustments right at the source. For example, you can use the controls to get a true black on one end and true white on the other. Often you can **de-screen** images to eliminate possible **moiré patterns** (interference between the regular dot patterns in printed images and the scanner's path).

♦   If your scanner software doesn't provide de-screening, try using the PhotoPlus Gaussian Blur filter to remove moiré. Make sure you've scanned at higher resolution (or size) so that you can then scale down the image to regain detail.

Some other tips:

♦   If you're scanning a number of pictures, you may find it's faster to save scanned images to disk rather than bringing them directly into PhotoPlus.

♦   In PhotoPlus, you can rotate an image if necessary to correct for any mis-alignment in the scan, then crop to remove any unwanted border pixels. Use the **Brightness/Contrast**, **Hue/Saturation/Lightness**, **Gamma**, **Equalization**, and/or **Stretch** adjustments to improve image quality.

Advanced Printing

Click the **Options...** button from the Print dialog to access additional printer settings.

Scaling and tiling

The **Layout** tab is where you can specify Scaling and Tiling options.
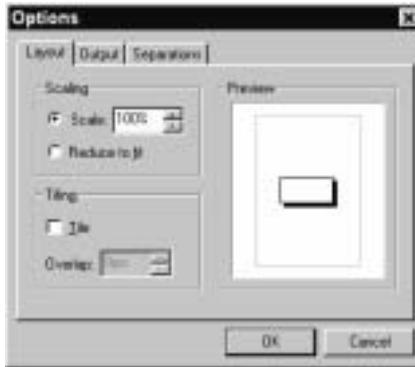
Scaling is usually set to 100%, but you might reduce it to proof a large image on one page or increase it to blow up a small image to fit a whole page. Choose the **Reduce to fit** option to make sure that your image will fit on the page.

Tiling allows you to print a large image on several sheets to be stuck together later.

The Preview area shows where on the page the image will be printed. It changes according to whether the printer driver is set to portrait (wide) or landscape (tall) orientation.

After specifying options, click one of the other tabs to set more options, or click **OK** to return to the main Print dialog and save any changes. Click **Cancel** to abandon changes.

Including printer marks

On the Output tab, you can specify whether the program is to print various marks as well as the image.
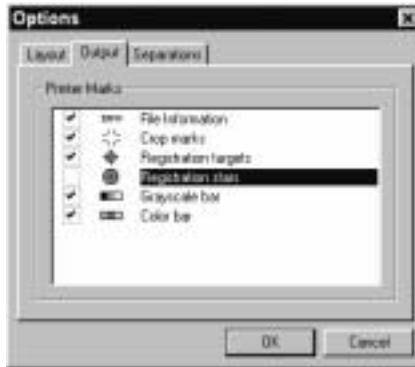
Marks and file information can only be printed if the physical paper size is one inch or more larger all round than the image.

After specifying options, click one of the other tabs to set more options, or click **OK** to return to the main Print dialog and save any changes. Click **Cancel** to abandon changes.

CMYK color separations

An offset press needs one independent plate for each color that will print on the job. PhotoPlus will let you choose to print either a composite copy or color separations which are used when printing the job to an imagesetter.

If the job is created properly, you then get, for each page, one complete negative for each color. If you were working on a flyer, you could print out a composite copy on your laser or ink jet printer which would give you one piece of paper with the whole flyer, or seps, which would give you four sheets of paper.

The **Separations** tab controls the printing of color separations.
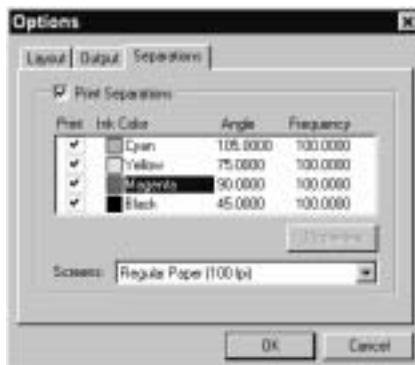
If you are using a PostScript® output device, checking the **Print Separations** box on the Separations tab allows you to choose whether to print separations for process printing and if selected, which separations to print. This box will be grayed out if you are not using a PostScript® printer driver.

Normally, separations are not enabled. On a color printer (e.g. an ink jet), if separations are not enabled you will get a single composite color page and on a mono printer (e.g. a laser printer) it will give a single grayscale page.

After specifying options, click one of the other tabs to set more options, or click **OK** to return to the main Print dialog and save any changes. Click **Cancel** to abandon changes.

PhotoPlus as an OLE Server

Finally, PhotoPlus can act as an OLE server. This means that you can embed PhotoPlus images as objects in other programs, such as Serif PagePlus, then just double-click them for editing using the PhotoPlus tools.

To embed a PhotoPlus object into a document in another program (in this case PagePlus), copy the image to the Clipboard by choosing **Copy Merged** (or **Copy**, for single-layer images) from the Edit menu.

Switch to the other program and choose **Paste Special...** from its Edit menu. The cursor will change to the insert picture cursor. Click once to insert the image.
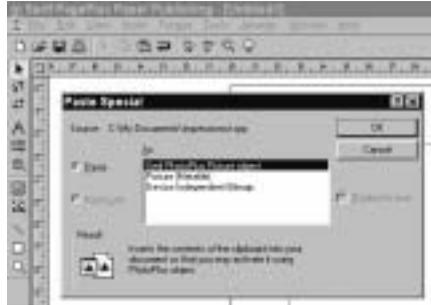
Tutorial Resources

For more experience with the tools and techniques covered in this chapter, we recommend these HTML-based tutorials on the PhotoPlus 8.0 Resource CD-ROM:

Try this tutorial...	For practice with these tools and techniques...
Exploring Color Spaces	Color modes: RGB and HSL
Image Formats	Choices in the Image Optimizer
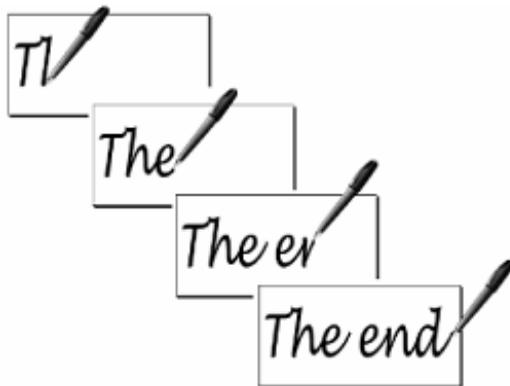
PhotoPlus Keyboard Shortcuts

Tool shortcuts

Press...			With...	To...
Shift	-----	-----	Selection tools	Add to current selection
	Alt	-----	Selection tools	Subtract from current selection
		Ctrl	Selection tools	Move selection contents
	Alt	Ctrl	Selection tools	Duplicate selection contents
	Alt	-----	Move tool	Duplicate selection contents
		Ctrl	Adjustable Selection tools, Crop tool, QuickShape tools, Image Map rectangle	Constrain aspect ratio when dragging to define shape or region
Shift			Straight Outline tool	Constrain to 15° angle intervals
	Alt	-----	Text, Paintbrush, Airbrush, Fill, Outline, QuickShape tools	Left-click to pick up foreground color; right-click to pick up background color
Shift	-----	-----	Clone tool	Define pickup origin point
Shift	-----	-----	Deform tool, Deform Mesh tool, Shape Edit tool	Drag center to constrain rotation to 15° angle intervals
Shift	-----	-----	as above	Drag corner handle to constrain aspect ratio
	Alt	-----	as above	Drag corner handle to resize relative to fixed point
Shift	Alt	-----	as above	Drag corner handle to resize relative to fixed point while constraining aspect ratio
		Ctrl	as above	Drag corner handle to skew
Shift	Alt	Ctrl	as above	Drag corner handle to change perspective

Menu command shortcuts

Press...		With...		To...
		Ctrl	Z	Undo last action
		Ctrl	Y	Redo last undone action
		Ctrl	L	Paste from Clipboard as new layer
Shift	-----	Ctrl	L	Paste from Clipboard into selection
		Ctrl	C	Copy selection or layer to Clipboard
Shift	-----	Ctrl	C	Copy merged (all layers as one layer) to Clipboard
		Ctrl	X	Cut selection to Clipboard
		Ctrl	V	Paste from Clipboard as new image
		Ctrl	D	Deselect pixels
Shift	-----	Ctrl	I	Invert selection
		Ctrl	A	Select all
		Ctrl	N	New image
		Ctrl	O	Open file
		Ctrl	P	Print
		Ctrl	S	Save
		Ctrl	Tab	Switch between image windows
		Ctrl	F4	Close current image window
Alt	-----		F4	Close PhotoPlus
Alt	-----		-----	Activate menus
			Tab	Hide/show active tab windows

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