# DrawPlus 5.0 Companion

*For Windows*

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# Welcome

# Introduction

Welcome to DrawPlus 5.0 and the remarkable power of vector graphics—the complete drawing, graphics and illustration solution for your home, school, church, or growing business. DrawPlus 5.0 can “do it all” for you, with automated Wizards—or let you do it all yourself, with total control over its versatile drawing features.

Whether you’re meeting DrawPlus for the first time or have been with it through many versions, you’re sure to appreciate 5.0’s combination of high performance, fair price, and ease of use. In fact, it makes so many things so easy to do, you might just think about retiring that paint program you’ve been using!

# About this book

Read this book to learn how to install, start and use DrawPlus 5.0, from the basics to tips and tricks for advanced users. Here’s a brief chapter summary:

1 **Welcome.** How to install and start DrawPlus and an overview of key features.

2 **Getting Started.** A quick look around the DrawPlus workspace and an introduction to using Design Wizards.

3 **Wizards at Work.** How to create a masterpiece using some of the built-in Wizards.

4 **Working with Objects.** A solid, hands-on overview to help you become “object-oriented.”

5 **Lines, Curves and Shapes.** An in-depth look at creating and editing figures built up from line objects.

6 **QuickShapes, Text, Connectors, and Pictures.** How to create and edit these other essential DrawPlus objects.

7 **Line, Fill, and Transparency Effects.** Introduces the concepts and tools you’ll need to create spectacular results.

8 **Using Layout Tools.** A tour of basic and advanced control features that can help you work accurately and efficiently.

9 **Special Effects.** A survey of additional tools and Wizards to enhance your creativity, with plenty of design examples.

10 **Web Graphics.** How to produce animations and hot JavaScripted slices, hotspots, and buttons for the World Wide Web.

# About DrawPlus 5.0

From decorative page elements and logos to full-page illustrations and animated Web graphics—and everything in between—DrawPlus 5.0 does it all. With the power of scalable vector graphics at your command, you'll see the creative possibilities open up right before your eyes! Whether you're a beginner or an expert, you'll find Wizards and tools you can use right away. With version 5.0, DrawPlus has improved on a product already unrivaled in price-performance for its feature set.

## What's new in DrawPlus 5.0

- **Chain Lines**
  Here's the ultimate in decorative line effects: easy to apply from the scores of pre-supplied choices, just as easy to edit or create from scratch! Chains take drawn objects and link them in sequence along a designated line, for marching footprints, themed borders—uniquely patterned, endlessly variable effects anywhere you want to apply them.

- **Dimension Lines and Scale Setting**
  Click a couple of times to take linear or angular measurements of any object on the page—DrawPlus displays the dimension using your choice of ruler units, at your specified scale (say, one inch to two feet). Dimensions update when objects are moved or resized! Design room layouts, make maps, draw scale models... the choice is yours.

- **Connectors**
  For drawing dynamic flow diagrams, schematics, family trees, and org charts, connector objects let you link your boxes and symbols and then rearrange at will. Connection points stay put on each object... keeping connections intact. Auto Connectors intelligently display bridges at line crossings, and even route themselves around obstructive objects.

- **Drag-and-Drop Fill and Transparency Editing**
  DrawPlus 4.0 introduced multi-color, gradient fills... now 5.0 makes them even more versatile. Simply drag solid colors from the Studio onto a fill path to add or replace colors for more subtle gradients. And achieve multi-level transparency the same way—just by dragging grayscale tones to set levels.

- **New Fill and Transparency Types**
  Look on the Studio's Fill and Transparency tabs, and you'll find an expanded selection of effects, such as 3-Color, 4-Color, and Square. Best of all, we've introduced Mesh Fills for impressively varied gradients using a path-node network—easy to customize with the special toolbar.

- **Web Image Slices and Image Maps**
  Beat the pros at their own game by using these techniques to add links to your Web graphics! With a few clicks, divide images into segments—each with its own hyperlink and popup text—or add hotspots to specific regions. Of course, DrawPlus outputs all the necessary HTML code to wrap the segments together.

- **Rollover States for Web Buttons**
  Take image slicing even further—let DrawPlus create interactive Web graphics that highlight or change state when users mouse over or click! Just create your variant graphics on the special layers, then export as usual.

- **Web Browser Preview**
  One click lets you see how your graphics will display in a Web browser, so you can quickly check quality, transparency, hyperlinks, and rollover behavior prior to final export.

- **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.

- **Studio Enhancements**
  Especially for working at high zoom levels, the new Navigator tab affords a thumbnail of your entire drawing with the visible area shown as a draggable view box. The new Color tab stores DrawPlus solid colors for easy access when editing either lines or fills. And the Library (formerly Wizards) tab adds scores of new pre-built elements so you can take advantage of new tools and features.

- **Soft Shadows**
  The improved DrawPlus shadow tool now adds a blur component to flat or slanted drop shadows for more professional results. (Yet another reason to forget all about needing a paint program!)

- **Professional Print Output**
  Now your artwork can be prepared for professional printing straight from DrawPlus. Whether you're creating color-separated PostScript® output or printing from your desktop, separating into CMYK for full color printing will save money and time, every time.

- **Design CD**
  Let's not forget the optional DrawPlus 5.0 Design CD-ROM, jam-packed full of over 750 ready made automatic documents and another 750 design elements... all ready to use—and now easier to access with the new, branching Wizard selection interface.

## Plus these established features...

- **Great Display, Performance, and Output**
  With anti-aliased screen display and smooth color blending, jaggies and banding are a thing of the past. You'll get superior printed results, with smooth color blending. And DrawPlus supports Transparent GIF, Animated GIF, and PNG for forward-looking Web page design.

- **Total Ease-of-Use**
  DrawPlus makes powerful features available to anyone with a host of ease-of-use features designed to zap that learning curve. You'll find accelerated learning tools like ToolTips, context-sensitive Hints & Tips and colorful QuickTours. The tabbed Studio—storing hundreds of preset lines, fills, transparencies, fonts, and design elements—is always convenient and ready to use.

- **QuickShapes**
  Can't draw? Won't draw? QuickShapes are the answer! They work like intelligent clipart… or the most powerful set of drawing tools you've ever envisaged. Even extremely complex shapes like spirals, petals, and webs are simple to draw and customize using QuickShapes.

- **Professional-Standard Drawing Features**
  Features like converting text to curves, defining custom envelopes, automatic shadows, layers, and scalable vector graphics give complete creative power. Plus special commands like **Contour** for outlining and edge effects... **Add** to composite two shapes into one... **Subtract** for cropping and masking... **Intersect** to carve out unique shapes and regions.

- **Advanced Fill Support**
  Apply high-end conical, ellipse, and plasma fills to any text or shape for exciting, professional results. Use bitmap fills—with over 200 supplied bitmap images in a range of categories for textures and backgrounds. Even import your own bitmaps and use them as fills on DrawPlus objects!

- **Transparency Effects**
  Transparency can make the difference between flat, ordinary visuals and sparkling realism! And DrawPlus provides it all—a full range of transparencies for shading, shadows, reflections, depth effects, and more.

- **Intelligent Colors**
  With DrawPlus, you can define new color sets as shades of a base color, then transform the color scheme of a whole image instantly—just by altering the base color. Let intelligent colors do the work for you!

- **Natural Curve Editing**
  No need to fumble with Bezier nodes... Simply click and drag to break and redraw a curve at any point. Apply smoothing selectively to freeform curves to eliminate that “shaky hand” appearance. Who says you can’t draw like a pro?

- **Animation Mode**
  Tap the power of QuickShapes and Wizards to turn out Web animations in no time—using advanced features like onion skinning, backgrounds, overlays, and frame management. Use the time you save to make more movies!

- **Backdrop and Watermark Wizards**
  Adding abstract or themed backgrounds, for dazzling presentations or space-styled scenes, is easy with Backdrop Wizard. And Watermark Wizard makes a notoriously difficult effect a snap to create with a wide range of customizable watermark designs on hand. Access both Wizards via the Studio’s Library tab.

- **Border Wizard**
  Vastly flexible Border Wizard instantly adds borders to the page or to individual objects. Choose a border from the extensive library, or be creative and let Border Wizard guide you through building a unique design.

# Registration, upgrades, and support

If you see the Registration Wizard when you launch DrawPlus, 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

## What you need to run DrawPlus

Serif DrawPlus 5.0 runs with Windows 95 or later, so you'll need a PC setup that runs Windows adequately. If you need help installing Windows or setting up your printer, refer to Windows documentation and help.

- IBM compatible Pentium PC with CD-ROM drive and mouse (or other Microsoft compatible pointing device)
- Microsoft Windows® 95, 98, 98 SE, 2000, or Window NT®4.0 or later operating system
- 16MB (Windows 95/98), 24MB (Windows 98 SE), or 32MB (Windows NT), or 64MB (Windows 2000) RAM
- 70MB (recommended install) free hard disk space
- VGA (256-color display) monitor or higher. For optimum display quality and performance we strongly recommend that a "Hi-color" (16-bit) or "True color" (24/32-bit) display setting be used.

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

Optional components include:

- Windows-compatible printer
- TWAIN-compatible scanner and/or digital camera
- Stylus or other input device
- Internet account and connection required for accessing online resources

## What you need to know

DrawPlus 5.0 is the easiest drawing package around. You don't need any drawing or design experience, as the DrawPlus Wizards will do virtually all the work for you! However, you will find it much easier if, before installing and using DrawPlus, you have a working knowledge of Windows.

You may find it helpful to spend a little time using Windows before you proceed. You should be familiar with terminology such as "icons" and "clicking."

## First-time install

To install DrawPlus 5.0 simply insert the DrawPlus 5.0 Program CD-ROM into your CD-ROM drive. The AutoRun feature automatically starts the Setup process. (If it doesn't, follow the manual install procedure described below.) Just answer the on-screen questions to install the program.

## DrawPlus 5.0 Design CD-ROM

If you also have the DrawPlus 5.0 Design CD-ROM, it's a good idea to install that as soon as you've finished installing from the DrawPlus 5.0 Program CD-ROM. Again, the AutoRun feature will automatically start the Setup when the Design CD-ROM is inserted into your CD-ROM drive.

## Manual install/re-install

To re-install the software or to change 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 DrawPlus 5.0 Program CD-ROM is inserted into your CD-ROM drive, click the **Install...** button and then simply follow the on-screen instructions.

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# Getting Started

# Getting Started

Once DrawPlus has been installed you're all ready to go! Setup adds a DrawPlus 5.0 icon to the **Programs** group of the Windows **Start** menu.

- Click the Windows **Start** button to launch DrawPlus 5.0. If DrawPlus is already running, choose **New** from the File menu.

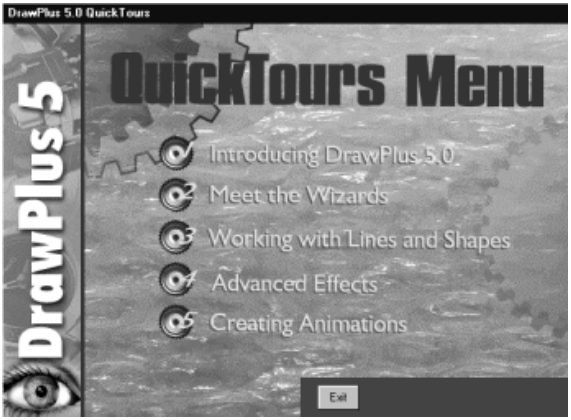
# DrawPlus Startup Wizard

The Startup Wizard appears whenever you start DrawPlus and presents you with seven choices.*


The best way to get started learning about DrawPlus is to view the first QuickTour, *Introducing DrawPlus 5.0*.

Click the fifth Startup Wizard choice, **View a QuickTour**.

* If you haven't installed the optional DrawPlus 5.0 Design CD-ROM, the Design Wizard option will not be available. The Serif DrawPlus 5.0 Design CD-ROM contains over 750 professionally designed Wizard documents for instantly creating greetings cards, certificates, posters, signs, banners, adverts, logos and much more. To find out more contact Serif (see "How to contact us" at the front of this book).




When the QuickTour menu screen appears, click the **Introducing DrawPlus 5.0** button. Once in the QuickTour, click the **Next** button to step forward, or use the other control buttons to step back, redisplay the first screen, or return to the menu.


To display the QuickTour menu later on, return via the Startup Wizard (choose **File/New**), or choose **View a QuickTour** from the Help menu.

Once you've viewed the introductory QuickTour, you're ready for some real hands-on exploration! If you're new to drawing software or want to make sure that you are getting the job done in the fastest and most economical way, then follow along in this Companion. You'll find it's an enjoyable journey, including tutorials, through the ideas that make DrawPlus easy and fun! If you've used drawing software before, you may wish to skip ahead to sections of particular interest.

# A Quick Project

DrawPlus 5.0 has all the tools you need to draw anything from scratch, but it also offers plenty of instant ways to create drawings automatically. To see how quick and easy it can be, let's start by creating a personalized birthday card in just a few minutes.

Choose **File/New** to display the Startup Wizard again.

☞ If you haven't installed the DrawPlus 5.0 Design CD, you won't be able to run the Design Wizard used in this example. Install it now, or simply read along to get an idea of how a Design Wizard works. The note below explains how you can view an equivalent card design in the Samples Gallery.

1. From the Startup Wizard's menu screen, choose the first item, **Use a Design Wizard**.
2. Click to expand the **Greeting Cards** category, then click the **Birthday** subcategory. A list of thumbnail previews appears at the right.
3. Scroll down in the list and select "Cousin 01," then click **Next**.

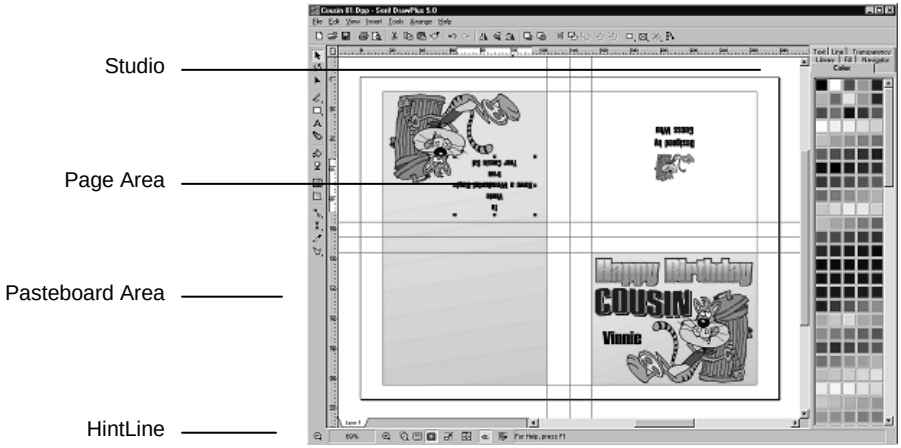
Now let's use the Wizard to personalize the card.

4. Add the recipient's name, your name, and the designer's name (that's you, too!) to the card by typing them in the boxes provided. Then click **Next**.
5. Scroll the window to preview available backgrounds and click the one you prefer. Again, click **Next**.
6. Click **Finish** to instruct the Wizard to create your greeting card.

At any time, you can move back through the Wizard steps to review any selection you've made, simply by clicking the **Back** button.

The Wizard takes just a few moments to do its work—and then you'll see your drawing appear on the DrawPlus page!

☞ If you don't have the Design CD installed, you can still view this birthday card example by choosing **File/New** and selecting the **View Samples** option from the Startup Wizard menu. Click the file name "BIRTHDAY.DPP" and then click **Finish**. To learn more about the Design CD-ROM, contact Serif (see the contact information at the front of this book).




Take a moment now to review the key parts of the DrawPlus interface:

- The active area of the DrawPlus display is made up of two areas, the **page** and the surrounding **pasteboard** area. You can draw onto either area but it is the page area that will be printed. You can use the pasteboard to store items that you might want to use in a design or to experiment with them. (The red lines through the middle are guidelines placed by the artist to aid in positioning.)
- DrawPlus tools are arranged in menus, toolbars, and the tabs contained in the **Studio** area on the right side of the screen.
- At the lower right you'll see the **HintLine** readout. As you move the mouse pointer over menu items, toolbar buttons, and tab controls, you'll see popup ToolTips and capsule descriptions of each feature will appear in the HintLine.

# Let's Experiment

Before printing the birthday card, we'll use a few of the DrawPlus tools to make some modifications to the drawing the Wizard produced.

There's a personalized graphic in the upper right quadrant (the back of the card) that includes the designer's name (yours, most likely) and we are going to reduce it slightly and reposition it. But first, let's rotate the whole assemblage so we can work on this quadrant right side up.

The entire drawing is a collection of objects. To select all the objects for rotation, choose **Select All** from the Edit menu. Then, click the **Rotate 90º** button on the top toolbar. Click it again, and all the objects will have rotated 180º, so the section we'll be working on is now in the lower left.

Before you can make any changes to a single object, you have to select it individually—for this, the **Pointer tool** was invented.

Click the Pointer tool button on the left toolbar (if the button is down, it's already selected) and then single-click on the graphic of the cat. You will see eight square dots appear around it. These are the object's **handles**.

Now click the text just below the graphic. You'll see handles appear around the two lines of text as the selection switches; both lines are part of the same **text object**.

To select both the text object and the graphic, hold down the **Shift** key and click the graphic again. Now the selection expands to include both objects.


Let's take a closer look by zooming in on the selection. Click the **Actual Size** button on the bottom toolbar.

If you're having trouble finding the Actual Size button on the toolbar, remember ToolTips. Move your mouse cursor over the buttons until you find the one you want.

To resize, first position the cursor over one of the selection's corner handles. The cursor changes and displays the size cursor. Click the handle and drag slightly in toward the center of the selection to reduce it. (If you accidentally deselect one or both objects, just repeat the **Shift**-click procedure.)

Let's reposition the selected objects a bit. Click in the middle of the selection (not on a handle), and drag it to the lower right corner of its quadrant.

Now for one more change. Click on the two-line text object to select it, and make sure the cat graphic is deselected. Then, in the Studio on the right side of the screen, click the tab labeled **Text**, which will pop to the front revealing controls for setting font, style, and other text attributes.

 Click the **Italic** button and you'll see the object's text respond by changing style.

As you may have noticed (if you're new to draw programs), everything in DrawPlus is an object that you can independently select and then vary. By grouping objects together you can create one object out of many, with incredible ease of manipulation each step of the way. It's this infinite variability that makes DrawPlus so powerful—you can try out as many different local effects as you wish. You can always retrace your steps and you don't have to worry about damaging the graphic as a whole. And that's only the beginning!

# Finish Up…

Well, let's call a halt to this mini-project and view the results!

## Save your card

Use **File/Save** to save a copy of your edited card design. DrawPlus saves and opens files just like all your Windows applications.

## Print your card

1. Select **File/Print...**.
2. Click the **OK** button.

If your card does not print properly, check your Windows documentation to make sure that your printer is installed correctly.

When the page comes out of the printer, fold the card in half top to bottom and in half again left to right. (To go all the way, sign it and pop it in an envelope!)

# Saving vs. exporting

When you save a drawing, DrawPlus uses its own proprietary formats (.DPP for drawings and .DPA for animations) to store the information. To be able to read the drawing into another application it has to be saved in one of the many standard formats. You can do this using the **File/Export...** command. For details on exporting, see online help (search on "exporting" in the Index) and also Chapter 10's sections on "Exporting animations" and "Optimizing Graphics."

# Getting Help

All the tools we have just used are explained more fully later in this book. If you ever need help then it is always available: just choose **Help Contents** from the Help menu or press **F1**.

Also, keep an eye out for the helpful hints that pop up automatically the first time you try certain operations. These contain useful information for any new user.

# 3

# Wizards at Work

# Introduction

Design Wizards are only one of several species of Wizard you'll encounter in DrawPlus. There are tool Wizards that help automate processes like replicating, transforming, and creating borders. In addition, the Studio's Library tab is a veritable gold mine of elements you can use like "spare parts" to assemble a drawing. There's still plenty of room for your own creativity—in fact, by using Wizards you'll save time on the repetitive tasks, leaving more time for the fun stuff!

# Creating a Bookplate

That's right: an old-fashioned, high-tech bookplate, in this case one especially designed for kids. You can flip ahead through the chapter to see how it's going to turn out. We'll actually produce a sheet of four bookplates that you can print, cut apart, and give to a youngster or perhaps use yourself. (You'll have to supply your own glue!)

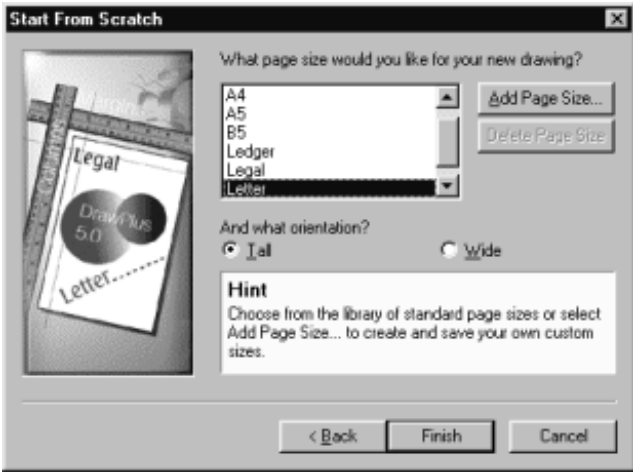
This mini-project will give you a chance to see several Wizards in action, and to build some confidence working with draw objects. If you're new to the concept of a draw program, you'll find it's a refreshing departure from labor-intensive paint programs. Here's a brief tour guide to the steps we'll follow:

- Creating a new document from scratch and placing guide lines
- Using a Wizard to create a backdrop for the bookplate design
- Selecting, resizing, and repositioning objects to improve the design
- Creating some simple shapes and applying fill and transparency
- Using a Wizard to introduce some text
- Using a Wizard to create a colorful border

## Creating the document

We'll want to begin with a blank slate, so...

1. Start DrawPlus (or choose **File/New** if it's already running).
2. Select **Create a Drawing** from the Startup Wizard.



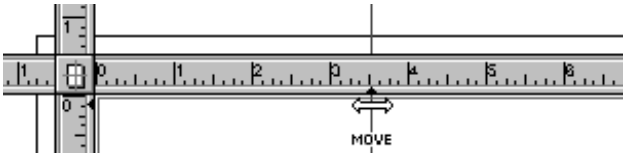

**3** Select a standard paper size such as Letter or A4. Check that **Orientation** is set to **Tall**, then click **Finish**.

## Setting guides

Since we're going to produce four bookplates on one sheet of paper, we'll begin by dividing the page area into four quadrants. We'll create the bookplate design in one quadrant, and replicate the completed design to the empty quadrants.

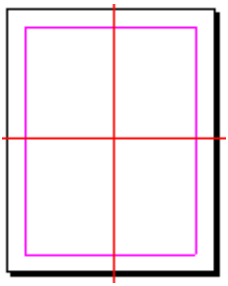
The page margins are indicated by the magenta rectangle around your page area. We need to locate the halfway point along each margin.

**1** Click the button where the two rulers intersect (at the upper left of the workspace), and drag until it touches the upper left page margin corner, as in the illustration below. With the zero point now at the margin corner, you can quickly figure the midpoint along each side.



2 At the halfway point along the top margin (you don't have to be absolutely precise), click once on the ruler. The illustration shows what the cursor will look like. A vertical red guide line will appear. Also click for a guide line at the midpoint of the left edge. If necessary, you can drag the guide lines around after you've created them, or delete extra ones by dragging and dropping them outside the workspace.

3 Double-click the ruler intersection and the rulers will return to their original position.



Now you should have two "crosshairs" that meet in the middle of your page, nicely dividing it into quadrants. Don't worry, the guide lines won't show up when you output your drawing—their only function is to help you position elements.

## Using the Backdrop Wizard

Next we'll use the Library tab to assemble a backdrop for the bookplate design.

1 In the Studio area to the right of the workspace, click the Library tab to bring it to the front. Click the drop-down list and select the **Backdrops** category, revealing a gallery of thumbnails from which to choose.

2 Drag the "Dinosaur 01" thumbnail onto your page.

3 The Wizard materializes to present you with some design choices. Pick the same ones we did, clicking **Next** after each selection: Blueish sky (at the lower left); a Pterodactyl (at the upper right) to go in the sky; and a Mammoth (lower left, with tusks) for the foreground. On the last screen, click **Finish**.

In a moment, the backdrop appears, filling most of the page area.

If you look closely to the lower left of the workspace, you'll notice that a new tab labeled "Paper" has appeared alongside the tab labeled "Layer 1," which was there before (take our word for it).


That's because the Wizard has placed the backdrop on a separate document layer that sits behind the rest of the document. It's called "Paper" because it's theoretically where a piece of paper would be. Layers keep clusters of objects separate. The assumption is that once you've got a backdrop, you don't want it to get tangled up with other objects you create.

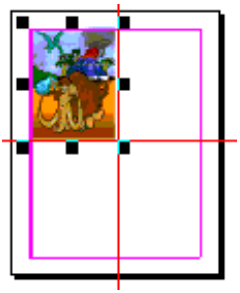
## Resizing and repositioning

As created, the backdrop is far too big: we want it to occupy one quadrant, not the entire page. And we can improve its composition, for bookplate purposes. No problem!

1. Click the **Paper** tab so you can work directly on the backdrop layer.
2.  Using the Pointer tool (all our manipulations will be done with this tool), click once on the backdrop itself.

You'll see the object's eight handles appear—notice that it's all one object at this point—but also notice the special cursor icon that signifies the backdrop is "locked" and cannot be moved. Locking the object is a safety measure the designer applied to prevent accidental changes. To move or resize it, we'll have to unlock it first.

3. Choose **Unlock Position** from the Arrange menu. Now you'll see a normal cursor and black handles.
4. Click in the middle of the object and drag it so its upper left corner fits into the upper left corner of the page area.
5. Drag the middle-bottom and middle-right handles to resize the image a bit, so it almost reaches the guide lines marking the edges of the quadrant. Leave about a quarter of an inch white space on these edges; we don't want the object to be too big.



6  Let's zoom in on the object, now that it's smaller. Click the **Zoom In** button on the bottom toolbar once. Notice that the zoom percentage is shown. You can adjust your view by using the scrollbars at the right and bottom of the workspace.

Now for an Important Lesson about draw objects.

7 Right-click on the backdrop object and notice that the item "Ungroup" is enabled. This tells you that the object you've selected is a **group**—and that you can ungroup it into its component parts. So go ahead and choose Ungroup.

While the selection appears not to have changed, it's in fact no longer a group, but now a **multiple selection** that includes all the components of the group—as one more click will show. The next series of actions will interchange the positions and sizes of the two animals on the ground.

8  Click on the Mammoth and you'll see it's selected. Now click the **Flip Horizontal** button on the upper toolbar so the Mammoth faces to the right. Click any of its corner handles and drag inwards to scale it down until it's slightly smaller than the blue fellow in the distance. Finally, drag the Mammoth off the backdrop and place it temporarily to one side.

9 Now it's the blue Dinosaur's turn. Click it and again choose Flip Horizontal. This time, drag outwards to scale it larger, and reposition it in the lower right corner.

10 Drag the Mammoth over to where dinosaur used to be and adjust the size and position of both objects to match the illustration.

The whole idea has been to open up some space at the lower left—and the dinosaur's gesture works better in the foreground anyway.

## Using Fill and Transparency

We're done with the backdrop layer now, and ready to add a few simple objects to complete the bookplate.

1 Click the **Layer 1** tab so you're working on the layer above the backdrop.

First we'll use the QuickShape tool to draw a black rectangle as show in the illustration below (left).

2  Click the **QuickShape** button on the left toolbar and select the QuickBox button (at the upper left, the default shape) from the flyout. Click where you want one corner of the box to go, and drag to the opposite corner. When you release the mouse button, the box fills with the default fill, almost certainly black at this point. Then you can click the box handles to resize or move it as needed. No doubt about it, QuickShapes are cool!

The next step is to set a different fill and apply a transparency effect to the panel you've just drawn. Make sure the box is selected.

3 In the Studio, click the Color tab to bring it to the front. We want to change the object's solid fill to a lighter color, so find a light-colored thumbnail further down in the gallery and click it to apply a different fill. We chose a pale purple shade (RGB 255, 218, 255 to be precise), but any fairly light tone will do.

4 Now click the Studio's Transparency tab. You'll see that the transparency type is "None," meaning it's opaque at present. Click **Solid** instead in the drop-down list, and drag the Level slider (just below the list) to the right until it's set at around 40%. As you drag, you'll see the backdrop beginning to emerge through the now-transparent panel.

## Using the Text Art Wizard

Our backdrop came from the Library tab, you'll recall, and we'll return there for another component.

1 Click the Library tab, then select the category **Text Art**. Select the subcategory **Effects** and drag the "Effects 08" the thumbnail on to the bottom of the page.

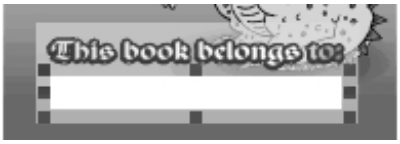
2 In the Wizard, enter this text: "This book belongs to:". Be sure to include the final colon! Click **Next**, then **Finish**.

3 You'll see the effect appear on the page where you dragged. Resize and position the text effect to look like the example below by using the pointer tool.


Before drawing a white box under the text, recall that the default fill is still black. But we want a *white* box! The solution is to set the default fill to white before drawing the box. Here's how...

4 Deselect all the objects in the drawing by clicking somewhere where there are no objects—a blank region of the page. Then select the Color tab and click the plain white thumbnail at the top of the gallery. You've just reset the default fill.

5 Double-click the QuickShape button to choose the QuickBox tool again, and drag out a white box shape just below the text.

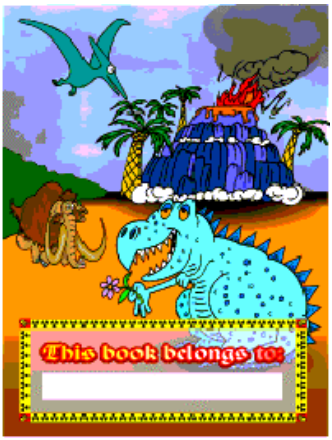


## Using the Border Wizard

For a finishing touch, we'll use yet another Wizard to apply a colorful border around the name panel.

1 Click the transparent box behind the text to select it.

2 Click the **Border Wizard** button on the left toolbar. Again, step through the Wizard screens making your choices. Choose a border "from library" (click **Next**) and "around current selection" (click **Next** again). In the list of border styles, choose the one named "Danger!" and specify "0.10in" as the width. Click **Finish**.




...and the bookplate design is complete!

## Using the Replicate Wizard

All that's left to do is take our one design, which (with some forethought) we fit into one quarter of the page, and duplicate it to the other three quadrants. The Replicate Wizard handles this nicely (and it's great for label sheets, as well).

In order to replicate the design, we need to be able to select all its elements. This is simply a matter of changing one setting.

1 Right-click either layer tab and check the item **Edit All Layers**. Now, instead of working with the layers one at a time, we can select any object—or all of them.

2 Choose **Select All** from the Edit menu. Now we have a multiple selection consisting of all the objects on the page. (If by chance you created any extra objects on the side, hold down the **Shift** key and click each one in turn to remove it from the selection. Only our bookplate design should be selected.)

3 Choose **Replicate Wizard** from the Tools menu. On the first screen, select "Position the objects for me"; on the second, choose 3 copies; click Next and then Finish.

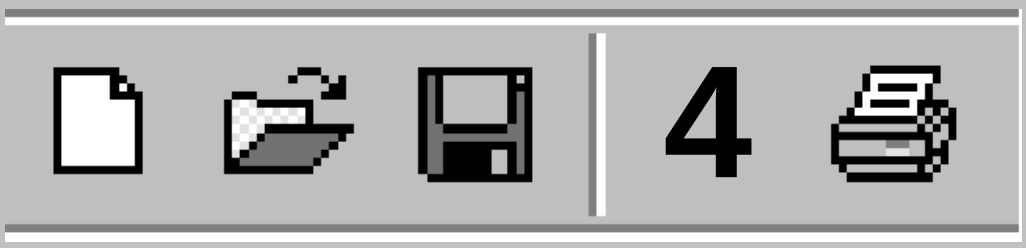
The Wizard ponders for awhile and then distributes the three new copies so as to complete a 2 x 2 grid:

## Saving and printing

With the Wizards' help, you've completed the project! The bookplate sheet is ready to go.

1  Click the **Save** button on the top toolbar and save your drawing.

2  To print, click the **Print** button (also on the top toolbar).




# Working with Objects

# Introduction

A DrawPlus 5.0 drawing is made up of objects that can be picked up, moved and changed in many ways. If you were working with pencil and paper you would have to erase and redraw a shape to move it a little to the right. Using DrawPlus you can do the same job more directly and with far less work by picking the shape up and moving it to where you want it to be! If you want to think of a DrawPlus drawing in real-world terms, think of cut-out paper shapes with low-tack adhesive; not pencil and paper.

The Design Wizards and Studio Wizards that we've explored so far can be thought of as "object factories." They let you pick a design and leave you with one or more new objects on the page. If the design is exactly what you want then all that is left is for you to print it or export it. If you want to personalize the design or add to it then you need to know how to work with objects! Ready to go?

# Types of Objects

DrawPlus can create three basic types of objects:

- Basic **lines** and shapes are created with the three tools on the Drawing toolbar's **Line Tool flyout**. They all consist of one or more **line segments** drawn between junction points called **nodes**. A **straight line** and a **curve** are basically lines with different kinds of nodes at each end. A **shape** is a line whose ends have been connected to form an enclosed region. We'll cover the fine points in Chapter 5, "Lines, Curves, and Shapes."
- **QuickShapes** are pre-designed objects that you can instantly add to your page, then adjust and vary using **control handles**. To create a QuickShape, you choose one from the **QuickShape flyout** on the Drawing toolbar, which contains a wide variety of commonly used shapes, including boxes, ovals, arrows, polygons and stars.
- **Text objects** are created by typing on the page after you've chosen the **Text tool** on the Drawing toolbar. You can choose any font or size, and apply standard text formatting. There's also a special dialog for editing text on the page. Chapter 6, "QuickShapes, Connectors, Text, and Pictures," covers these in detail.

To get our feet wet, let's try creating using each of the creation tools to produce some sample objects.

## Drawing basic lines and shapes

DrawPlus offers a choice of three line tools on its **Line Tools flyout**. None is "superior" to the others—each has its role to play. We'll try them all, starting with the simplest.

Locate the Line Tools flyout—it's the fourth button down on the Drawing toolbar at the left of the screen. It will be showing one of the three icons below (the icon will change each time you choose a different line tool, to show the last one you selected.)

Click the button and the flyout appears, with an icon for each of the three tools.

Click the **Straight Line Tool** button in the middle. To draw a line, simply click with the left mouse button somewhere on the page and drag to another point while holding down the mouse button, then release the mouse button. Notice that the first click "anchors" one end of the line, and then you can take your time moving the cursor around until the line is exactly where you want it. (But don't worry if it turns out wrong—with DrawPlus you can always go back and change it later!) Also notice the line's two nodes, one at each end.

Now return to the Line Tools button (which is now displaying the Straight Line tool's icon), click it, and this time choose the left icon from the flyout, for the **Freehand tool**. Immediately, you'll notice the **Curve toolbar** pop up. (This is used for editing drawn curves, and we'll deal with it extensively in the next chapter.) Now pretend you're a 4-year-old and just scribble a bit on the page by clicking once, then dragging randomly. When you release the mouse button, your scribble turns into a complex curve, complete with square dots indicating its nodes—at the two ends, and at each point where two line segments come together.


Now for a bit of magic. On the Curve toolbar, you'll see a small slider control. Click its sliding arrow and drag all the way to the right, then all the way to the left. You'll see your scribble—still selected—smooth out (with fewer nodes) as you drag right, and become more jagged (with more nodes) as you drag left. This **Curve Smoothness slider** can work wonders to improve your confidence when drawing onscreen, something few of us are good at. For the smoothest curves the next time you draw a freehand line, leave the setting at maximum.

By the way, you may have noticed by now that there's really no difference between drawing on the page or the pasteboard area. Objects behave the same wherever they're placed, until it comes time to print the page (then pasteboard objects are excluded). An exception to this rule occurs if you add more than one **layer** to your document. Chapter 8, "Using Layout Tools," covers layers as well as rulers, guide lines, and other ways you can use the DrawPlus interface to facilitate your work.

 Moving right along, return to the Line Tools flyout and this time choose the third flyout choice, for the **Curved Line tool**. This is the least intuitive of the three line tools, but Chapter 5 will dispel any worries you have. For now, let's just compare it to the other two.

Unlike the Freehand and Straight Line tools, the Curved Line tool wants to keep drawing a new line segment each time you click; it doesn't stop working until you press the **Esc** key (or double-click). It's designed for producing complex, combination curves and shapes in a highly controlled way.

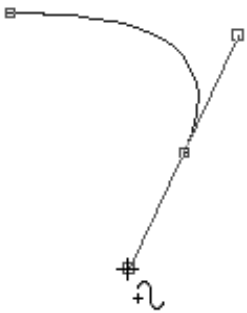
The Curved Line tool actually has two modes, and the first is quite simple to use. To draw a series of straight-line segments, click and release quickly. In connect-the-dots fashion, the line extends itself with a new segment each time you click. Try this, and press **Esc** at any point to end the line. To begin another line, choose the tool again by double-clicking its button.

To create a closed shape, let's say a triangle, click three times to draw the first two sides, then move the cursor

over the line's starting node. When you see the cursor change to include a small box, click again. Instantly a shape object appears, filled with a default solid black color. Remember, shapes are just lines that are closed upon themselves.

To draw a complex curve, click and hold down the mouse button instead of releasing quickly. 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—even though you haven't drawn it yet!

Release the mouse button with the attractor nodes about a half-inch from the starting node. Now click and hold again, a couple of inches away. The line's first segment appears, and its curvature will respond as you drag out the new pair of nodes orbiting the second click point. Actually the node you're dragging feels like it's "repelling," since the segment curves away from it, while the opposite node does the actual "attracting."



In Chapter 5, we'll explore how to edit all these lines with the **Node tool**. Feel free to keep experimenting with the Curved Line tool at this point—and pick up the tour when you're ready.

## Making a QuickShape

We'll begin by using the QuickShape tool to draw a rectangle, otherwise known as a "QuickBox."

Locate the **QuickShape** button—the fifth one down on the Drawing toolbar. Chances are it's displaying the QuickBox icon shown here, but note that the icon will change each time you choose a new QuickShape. Click the button and the QuickShape flyout flies out, with the QuickBox shape at the top left corner.

Click the QuickBox icon in the flyout. When you have selected the QuickBox, or any QuickShape tool, the cursor changes to an outline arrow with a light bulb below it.

Now to draw your box, click and drag out a region on the page. When you release the mouse button you'll see that the box appears surrounded by eight black markers called **handles** that indicate that the box is currently selected.

If you look at the Drawing toolbar, you will notice that the **Pointer tool** has been automatically activated and that the cursor is now an arrow. If you want to de-select the object, click using the Pointer tool anywhere outside its outline. Now click anywhere within its outline to select it again. (Just a preview of what's in store later in this chapter. Chapter 6 will return to QuickShapes in more detail.)

## Typing text

To enter text on the page, first select the **Text tool** by clicking its button on the Drawing toolbar (this one always shows a letter "A" icon). Click on the page and drag down to specify the size you want the text to be initially. (Of course, you can adjust it later.) You'll get a blinking cursor using the pointsize you specified.

Now type some text—just a few letters will do. That's all there is to it! As long as the cursor is blinking, you can keep typing text or backspace to delete previous text. You can also use the Studio's **Text tab** to apply basic formatting.

The default font is Arial, but that's easy to change. Click the Text tab in the Studio, and you'll see a listing of available fonts. What's more, you can see what the fonts look like! To change the font, simply click a different font name in the Text tab's listing.

To enter another block of text, click the Text Tool button again and click elsewhere on the page. Chapter 6 will carry on with a discussion of text-editing options.

# Manipulating objects

If you've been following along with the examples in the preceding section, by now you have a rather well-decorated page with a random assortment of lines, shapes, QuickShapes, and text objects. Congratulations! That gives you something to work with as we go on to review the various standard ways to manipulate objects in DrawPlus. In fact, it might be a good idea to choose **File/Save** at this point (name the document something like "TEST.DPP"). If you take a break, you can reopen the file (using **Open Saved Work** from the Startup Wizard) and pick up where you left off.

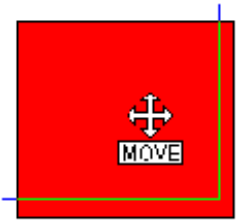
## The selection tools

At the top of the Drawing toolbar, above the creation tools, you'll find a group of three tools collectively known as the **selection tools**. When you draw an object it is initially selected for you so that you can modify it. For example, you'll see a line's nodes, or a QuickShape's handles. To select another object, just choose a selection tool, then click the object.

- The first selection tool is the **Pointer tool** and, as you would guess, it is mainly used for selecting which object or objects you are going to be working with.
- The second tool is the **Rotate tool** which, besides letting you select objects, allows you to rotate objects to any angle or distort them by shearing.
- The third tool is the **Node tool**. It's used to alter the shape of objects in very precise ways. We'll deal with this in detail in Chapter 5.

## Moving objects

You can move any selected object using the Pointer tool. As we've seen, once you have drawn a QuickBox the current tool automatically changes to the Pointer tool so that you can position it. If you move the cursor over the object and hold down the mouse button you will see the cursor change



to a four-pointed arrow and the Move cursor appears.

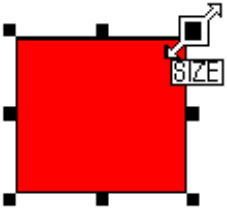
You can now move the object anywhere you want and drop it back onto the page or pasteboard by releasing the mouse button.

Try this, and the other techniques we'll be covering, with several different objects, using the assortment on your test page. (Or choose **File/New** and draw some new objects, as described above.)

Another way of moving a selected object is to press the keyboard arrow keys. The object moves one step in the direction of each keypress. There are various techniques for positioning an object with great precision that are described in more detail in Chapter 8, "Using Layout Tools."

If you pause for a moment before you move the object you will see the object as you have drawn it throughout the move. If you move off as soon as you press the left mouse button down you will only see an outline of the object.

## Resizing objects



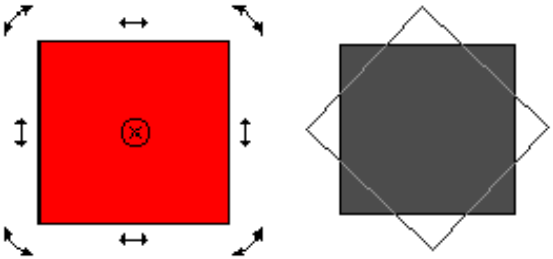

As well as moving a selected object you can also alter its size. If you position the Pointer tool over one of the object's handles you will notice that the cursor changes to a double-headed Size cursor.

If you now drag the handle, the object will grow or shrink accordingly. Clicking and dragging the corner handle produces an equal change in both the horizontal and vertical size of the object—it keeps the aspect ratio. If you click and drag one of the handles on the sides of the object you can change its size horizontally or vertically, stretching or squashing the object in that direction. For example, to turn a square into a long, thin rectangle, just drag on one of the handles on a vertical side.

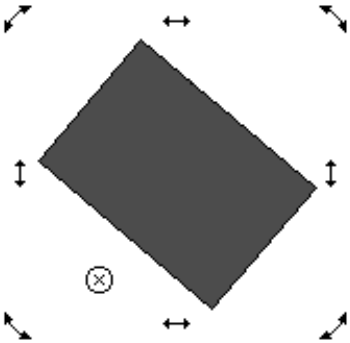
## Rotating objects

To rotate a selected object you use the Rotate tool. For convenience, you can also select objects using the Rotate tool just as in the case of the Pointer tool. The difference is that the selected objects are displayed with a different set of handles appropriate for the tool.

The curved handles at each corner of the object are used to rotate it about the center of rotation—the circle with a cross. If you click and drag any of the curved handles the object pivots around this center marker. When you release the mouse button the object is redrawn at its new angle.

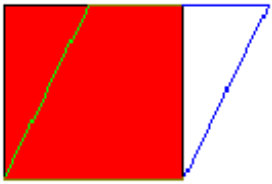


You can drag the center of rotation to any position on the page and when you drag on the curved arrows the object will rotate about the new pivot.



Although the Rotate tool is primarily designed to allow you to rotate objects, you can also use it to move objects by clicking on the object (not on a handle) and then dragging to the new location.

## Shearing objects



Besides being able to rotate an object, the Rotate tool allows you to skew or “shear” it. If you drag one of the straight double-headed arrows in the middle of each side, then the shape is distorted.

The effect of a shear distortion is very easy to see in a very simple shape such as a square. To understand how it affects other more complicated shapes, just imagine that the shape is drawn on a small sheet of material that is being distorted in the same way as the square.

## Constraining a change

One of the advantages of being able to change objects so easily is that it is simple to rearrange things. Sometimes this very freedom to make changes is a problem and you want to be able to control the changes more precisely. If you hold down the **Shift** key while dragging an object then the change will be restricted to a smaller range of possibilities. For example, moving an object with the **Shift** key down restricts movement to the horizontal and vertical directions only. If you hold down the **Shift** key while rotating then the angle will change in 15-degree steps.


If you hold down the **Shift** key while dragging a corner handle you can move it freely to produce an unequal scaling in the horizontal and vertical directions.

When you are drawing a new QuickShape object you can also constrain the horizontal and vertical dimensions to be the same by holding down the **Ctrl** key while dragging. For example, if you want to draw an exact square or perfect circle press and hold the **Ctrl** key before you release the mouse button.

Having seen how much can be achieved simply using the pointers it’s time to move on to other operations that you can perform on selected objects. These involve menu commands and tools from the Standard toolbar.

## Deleting objects

If your test page is getting too cluttered, you may wish to remove some of the extra objects. In fact, you may already have discovered that to delete an object from the page simply select it with the Pointer tool and press the **Delete** key. (You can also choose **Clear** from the Edit menu.)

## Changing your mind

After mentioning deletion, it's worth introducing a quick and easy way of undoing your mistakes! If you want to reverse any operation on a drawing you can undo it by clicking the **Undo** button on the Standard toolbar. You can also press **Ctrl+Z** or choose the **Edit/Undo** menu command. The command as shown in the menu will actually name the action that it will undo. For example, if you have just deleted an object using the **Edit/Clear** command the Undo menu item will become **Undo Clear**. In this way you can always be sure what you are "undoing"!

Having changed your mind you might regret it and want to restore the previous state of affairs. This can be done by clicking on the **Redo** button, the equivalent of **Edit/Redo**.

By default DrawPlus keeps track of the last 8 operations. You can change the number of operations stored using the General tab of the **Tools/Options...** dialog.

## Cut, Copy and Paste

As well as deleting a selected object, you can also remove it to the Windows Clipboard using the **Edit/Cut** menu command. Once on the Clipboard you can paste the object back onto the page using the **Edit/Paste** menu command. If you don't want to remove the object from the page you can use the **Edit/Copy** command to make a copy on the Clipboard. These commands are useful when you want to transfer an object between drawings or between different Windows applications.

The standard Windows keyboard shortcuts for these operations are worth remembering, along with their conventional icons on the Standard toolbar.

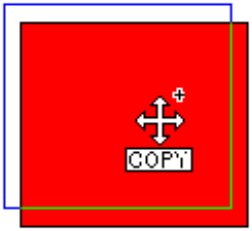
**Ctrl+X = Edit/Cut**

**Ctrl+C = Edit/Copy**

**Ctrl+V = Edit/Paste**

## Quick copying

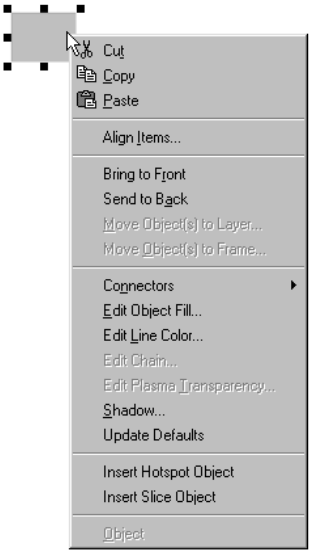
While you can make a copy of an object using **Edit/Copy** and **Edit/Paste** or their shortcuts, there is an even quicker way! If you click on an object, then hold down the **Ctrl** key while dragging, the cursor changes to show a small "+" in the top right hand corner and the word "COPY" appears just below it. When you release the object, a copy is displayed at the new location and the original object is still in the same position.




The same technique works when you are rotating or shearing an object. For example if you hold down the **Ctrl** key while rotating an object the result is a new copy at the new angle, and overlapping the original object.

## Right-click menus

For maximum flexibility there is yet another quick way to perform cut, copy and paste operations. If you click the right mouse button while an object is selected you will see a pop-up menu appear.



DrawPlus uses right-click menus extensively, so the actual commands that you see listed depend on the type of the object or the area of the screen on which you right-clicked. You'll find a complete listing of right-click menu options in online help (search "right-click menus" in the index).

## Adding more objects

So far all our examples have been concerned with selecting and manipulating a single object. In a real drawing there are likely to be lots of objects. DrawPlus draws objects on the page in the order in which you created them. It's easier to see this in practice than to read about it so it's worth following through this explanation.

1.  Click twice on the QuickBox tool to access the QuickShapes flyout and keep the QuickBox tool selected.

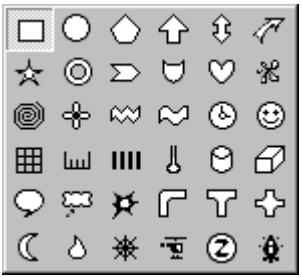
2. Click (don't drag) near the center of the page.

Clicking without dragging produces a small default square colored with the default fill. Notice that the square is surrounded by eight handles, indicating that the Pointer tool is active and that this object is selected.

3. Select the QuickBox tool again. This time click and drag a long, thin box that overlaps half of the original box, and extends below it as shown below.

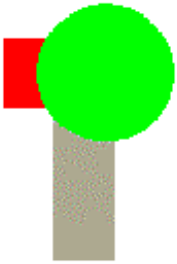
4. The new rectangle is the same color as the square so let's make it look different. Click to display the Color tab and click a different color in the solid color gallery.

5. Now click the QuickBox tool once to open the QuickShapes flyout.



6 Select the second tool in the top row, the QuickEllipse.

7  The QuickEllipse draws ellipses and to draw a regular circle with it you simply hold down the **Ctrl** key while you click and drag across the page. Select green from the Fill toolbar to change the appearance of the circle.



8  Now select the QuickSplats tool from the QuickShape flyout, click with the mouse cursor positioned inside the circle and set its fill to another color by selecting a different solid color from the Fill tab.

Notice that after you draw a QuickSplat, the Node tool, not the Pointer tool, is activated. We'll cover that later but for now…

9 Select the Pointer tool and click on the "splat" to select it. Click on the splat again and hold the mouse button down so that the Move cursor appears. Move the splat so that all four objects overlap as shown.

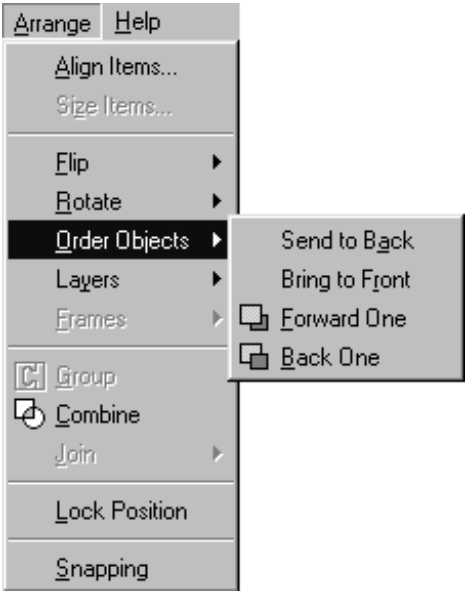
## Selecting overlapping objects

Once you have a set of overlapping objects the job of selecting a specific one becomes a little more complex. How do you select an object that is "behind" other objects? If the object you want to select isn't completely hidden, then you could click on a portion of it where it is visible. Alternatively, repeatedly click with the mouse over the objects. Each time you click at the same location, a different object in the stack is selected, allowing you to select any of the overlapping objects.

Let's see this in action. First, click with the cursor somewhere in a blank region so that none of the objects are selected. Now place your cursor at a point where all the objects overlap. Click once and the object "on top" (the splat in this case) will be selected. A second click at the same point will select the next object, the circle in this case. A third click selects the rectangle, the fourth the square and a fifth click takes us back to the first object, the splat.

## Re-arranging objects

As we have seen, DrawPlus places objects on the page in the order you draw them. It also lets you change this order using **Arrange/Order Objects**.




There are four possibilities in this menu but not all of them are always available. If you have selected an object that is on top of all others you will have the options **Send to Back** and **Back One** - you can't bring it forward because it's on the top level of the stack. If you have selected the object that is at the bottom of a heap you will have the options **Bring to Front** or **Forward One**. All the options are available for objects that are neither at the top or bottom.

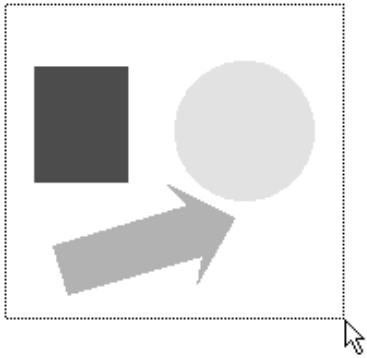
There are buttons for the ordering operations in the Standard toolbar.

Click on  for Forward One and on  for Back One. If you double-click on these buttons they do a Bring to Front or a Send to Back respectively.

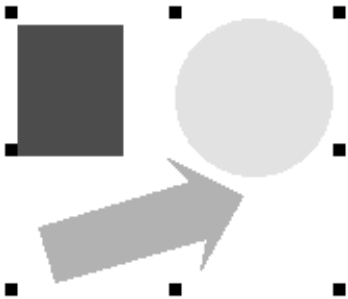
## Selecting multiple objects

As well as selecting a single object you can select more than one object at one time. A set of objects selected in this way forms a **multiple selection** that you can manipulate as if it were one object, or turn into a group object, as we will discuss in Chapter 8, “Using Layout Tools.” For now, the question is how to select more than one object at a time?

There are two ways. The first is to use the Pointer tool to draw a **marquee box** around the objects you want to select. Drawing a marquee box is much like drawing a QuickShape rectangle. First select the Pointer tool, then click and drag a box that surrounds all the objects you want to select. An outline appears as you drag.



When you release the mouse button, all of the objects within the marquee box are selected and one selection box, complete with handles, appears around the cluster of objects.



The multiple selection can be sized, rotated, skewed, copied, deleted, and so on, in one operation as if it were a single object.

Another method of creating a multiple selection is to use the **Shift** key to modify an existing selection. If you click on an object while holding down the **Shift** key it will be added to the current selection. If the object is already part of a group selection then it will be deselected. Using the **Shift** key you can add objects to or take objects away from the current selection.

The **Shift** key also works if you use the marquee method of selecting multiple objects. In other words, you can add or remove more than one object at a time from the current selection by dragging a marquee box around the objects while holding down the **Shift** key.

# What's Next?

We've explored how objects can be created and manipulated. You can use the techniques in this chapter to work with just about any object in DrawPlus.

The next two chapters will focus on specific objects, with more tips on creating them as well as details on editing them. You've got all the basic information you need to begin exploring the creative possibilities of DrawPlus.

# 5

# Lines, Curves, and Shapes

# Introduction

In Chapter 4 we introduced lines, curves, and shapes as variations of one basic object: the line. They all consist of one or more **line segments** drawn between junction points called **nodes**. In general, if we use the word “line” it can mean either a **straight line** or a **curve**—both are lines but with different kinds of nodes at each end. A **shape** is a line whose ends have been connected to form an enclosed region.

You’ve also had a chance to use the three line tools...

 **Freehand**

 **Straight Line**

 **Curved Line**

...to create simple lines and shapes. See the previous chapter if you need to review the steps. Now, we’ll go on to explore how to modify lines and shapes that you’ve drawn, and achieve precise control over the results.

The principles of editing plain lines, as described in this chapter, will serve you well in our later discussions of special DrawPlus line types like **connectors** (Chapter 6), **dimension lines** (Chapter 8), and **chain lines** (Chapter 9).

## Properties of lines and shapes

Lines can be either straight or curved. They have **line properties** like color and weight (thickness). When you draw a new line, it takes on the current **default** line properties; initially the default settings are for a solid black line with a weight of 1.0 pixel.

Because shapes have an interior region that can be filled (for example, with a solid color or a bitmap), they have **fill properties** as well as line properties. The interior region takes on the default fill as soon as a line is closed to become a shape; initially the default setting is for a solid black fill.

For more on changing the line and fill defaults, and applying line/fill effects, see Chapter 7, “Line, Fill, and Transparency Effects.”

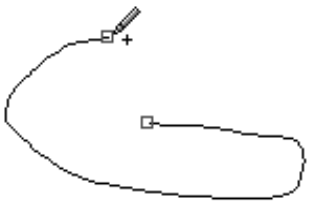
# Extending and Redrawing Lines

If you haven't already done so, now's the time to reopen your test document—the one with an assortment of lines, curves, and shapes you created in Chapter 4. Or, you can start with a clean slate by opening a new DrawPlus document. Either way, we'll assume you already know how to draw the basic lines and that you're trying the examples in your own document as we forge ahead.

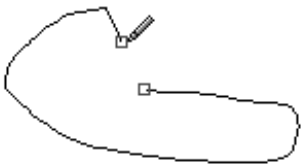
## Extending a line

Any kind of **open line** (that is, one that hasn't been closed to create a shape) can be extended, and you can use any of the three line tools to do so.

For example, suppose you've drawn a freeform line with the Freehand tool. When you release the mouse button the curve you've drawn is displayed with two red nodes at each end.



Now if you move the Freehand tool cursor over either of the nodes, a small + sign will appear. Click at that location, and the next line that you drag out will be a continuation of the existing line.



Remember, you can use this technique with any kind of line and with any of the line tools to build up a long line. And by drawing a line between one end node and the other, you can close the curve, creating a new shape!

## Redrawing a line

The Freehand and Straight Line tools let you redraw any section of a line. Try the following steps on any of the lines you've already drawn.

First you need to select the line you want to modify. Since the line tools can't select objects, you'll need to either click the line with one of the three selection tools (Pointer, Rotate, or Node), or press the **Tab** key repeatedly to cycle through the objects on your page, until the one you want is selected with handles.

Now choose the Freehand tool from the flyout. The line is still selected, but now you can see its nodes. Move its cursor slowly in the vicinity of the selected line, and you'll see the cursor change to include a curve shape to indicate where you can click to begin redrawing.

Pick a starting point somewhere along the line, then click and a new node appears immediately.

Keep the mouse button down and drag to draw a new line section, connecting it back to another point on the original line. Again, the cursor changes to include a curve when you're close enough to the line to make a connection. When you release the mouse button, another new node appears at the release point. The line you've just drawn replaces the portion of the original line between the two new nodes!

You can try the same thing on your own, using the Straight Line tool.

# Editing Curves

So far, we've covered the most direct ways of drawing, extending, and redrawing lines, using just the line tools. For even finer control, you can use the **Node tool** and the **Curve toolbar** to edit curves (that is our catch-all term for both simple and complex lines). The techniques involved are a bit more complex, but not really more difficult. In fact, the outcome depends less on your eye-hand coordination and more on your having a clear idea of what effect you want. With these two tools, you can get just about any effect you desire!

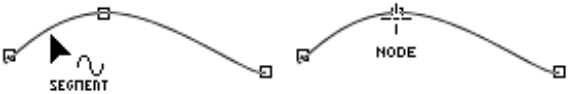
You've no doubt noticed the Curve toolbar, which pops up automatically each time you choose the Freehand tool. In Chapter 4, you learned how to smooth a curve using the Curve Smoothness slider that's part of the Curve toolbar. Very shortly, we'll discuss what all those little buttons do.

## Reshaping a curve


First, let's introduce the Node tool. Click its button on the Standard toolbar, then click on any curved line on your page. (Make sure it's a curved line, not a straight line.) As you might expect, the line's nodes appear, and the Curve toolbar also pops up.

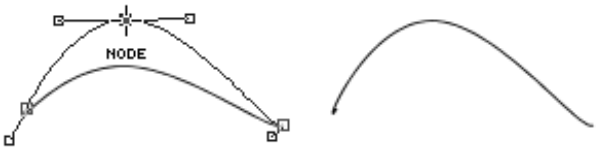
To see what you're doing in the next few steps, it will help to be zoomed in fairly close to the line, so click the **Zoom In** button if necessary.

Move the cursor over the line. You'll see that when you're over curved segments of the line, it says "SEGMENT." Over a node, the cursor changes to include the word "NODE." Over straight-line segments, it's blank.

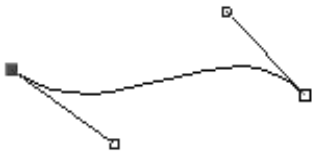


As with the other helpful cursors we've encountered, the extra information conveys what you may expect to happen if you click at a particular point. Try clicking and dragging one of the line's curved segments. The effect is similar to redrawing with the Freehand tool, except that no new nodes are added—and as long as you hold down the mouse button, you can keep adjusting the shape of the segment until you've got it right. (And if by chance you don't get it quite right, you can undo a change simply by pressing **Ctrl+Z** or clicking the **Undo** button.)

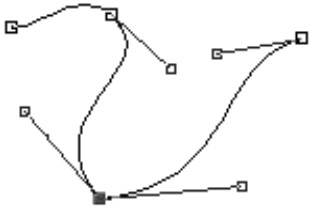

Now try clicking and dragging a node. By moving a node, you can reposition the curved segments on both sides of the node.




If you simply click and release on a curved segment or a node, you select it—or more precisely, you select the adjacent nodes, leaving their **control handles** visible. Each line segment has two control handles, one on either side, that determine the path of the line segment between them. In the case of a very simple curve with only one segment, here are the two handles:



Corner nodes join two segments, and so when you select a corner node you see two handles sticking out from it. Each one helps to control the segment in the direction it's pointing. Here's a slightly more complex curve with a corner node selected. You can see that there are two pairs of control handles visible, one for each of the segments joined at the selected node:



Once you realize that control handles work in pairs like this, it becomes easy to understand how to edit a curve. You can drag a node's control handles independently to produce very precise changes in the curvature of the line on either side. Try it yourself—our static illustrations can't quite convey how the lines behave. You can shorten or lengthen the handles, which changes the **depth** of the curve (that is, how far out the curve extends), or alter the handle angle, which changes the curve's **slope**.

If you look at any particular control node, you see its handles determine how the curve will pass through it. If the two handles are in very different directions then the curve will slope (change direction) sharply as it passes through the control node.

Sometimes this is the behavior you want, but if you want a smoother curve then you need to adjust the handles on either side of the node so that the curve leaves the node at the same angle by which it entered. In other words, for a smoother curve the handles have to form a straighter line.

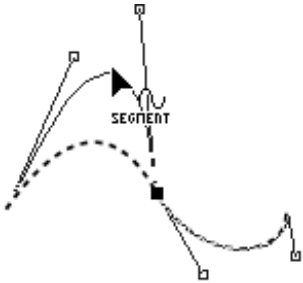
To keep the curvature the same on both sides of the control node, the handles also need to be kept at the same length as well as in the same direction.

## Fine-tuning a curve

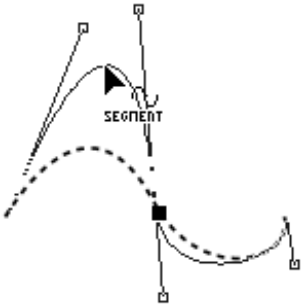
Ready for one more key bit of information about nodes? As we've just seen, when you select a corner node it displays one handle for each of the two line segments joined there. When you adjust one of these handles, how the other responds depends on the node's **type**. And there are in fact three types of nodes. The difference between them is rather subtle, but worth understanding if you need to achieve maximum control over a line's shape.

These are the three types of "corner" you can create: **sharp**, **smooth**, and **symmetric**. You can tell at a glance which type of node is selected by inspecting the Curve toolbar to see which of the three buttons is down. Rather than having to minutely adjust handles individually to produce smooth and symmetric corners, DrawPlus will do the job for you. Simply select a node and click one of the three corner buttons on the Curve toolbar.

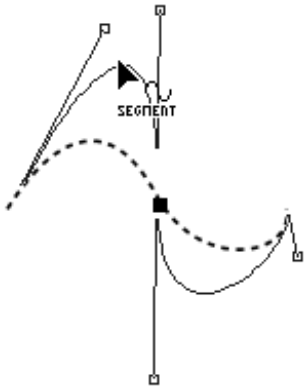

A **Sharp** corner means that the lines to either side of the node are completely independent so that the corner can be quite pointed. For example, here's a curve (dashed line) with a sharp node in the middle. Dragging the left segment has no effect on the right segment.



 A **Smooth** corner means that the slope of the line is the same on both sides of the node, but the depth of the two joined segments can be different. If (below) we change the middle node to a smooth node, dragging the left segment alters the slope but not the depth of the right segment. The handles at a smooth corner rotate together, but you can drag one to be longer than the other.




 **Symmetric** corner nodes join line segments with the same slope and depth on both sides of the corner node. Below, with a symmetric node joining the segments, adjusting one segment affects both the slope and depth of the other. At a symmetric node the handles not only rotate as one, they change length together.




 To turn a curved line segment into a straight line segment, select the segment and click the **Straighten Line** button. The selected segment immediately jumps to a straight line. To go the opposite way, click a straight line segment and then click one of the three corner node buttons. Then you can adjust the curvature of the newly curved segment.

## Adding and removing nodes

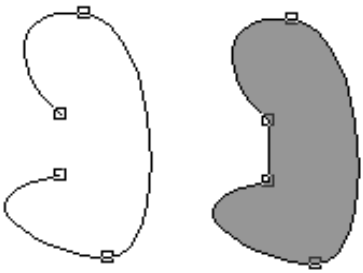
You already know that extending a line by drawing with any of the line tools adds one or more new segments and nodes off the end of the line. You can use the Node tool to add or subtract nodes in the middle of a line, as well.

To add a new corner node, simply double-click the point on the line where you want the node to appear. Adding a node can be useful if the curve only needs a slight change, because it provides an additional pair of control handles to adjust.


Sometimes it's a good idea to remove control nodes that aren't really necessary to form the shape of a curve. After you've drawn a freeform line with the Freehand tool, as long as the line is selected, you can use the Curve Smoothness slider (as described in Chapter 4). Or you can choose **Tools/Clean Curves** to have DrawPlus strip away extra nodes (see below). After that, you can continue the process by hand if necessary, selecting individual nodes and then using the Curve toolbar's **Delete Node** button. When a node is removed, the curve is drawn between the remaining nodes without making any changes to their handles.

## Closing, opening, and joining curves


Sometimes you'll want to turn an open curve into a closed curve (a shape, in other words), or you may accidentally mis-draw a shape, leaving an open curve. The solution in both cases is to use the **Close Curve** button from the Curve toolbar. This draws a straight line between the first and last control nodes. If you don't want the curve closed by a straight line, then you can use the Curve toolbar afterwards to convert the segment's control nodes to a smooth or symmetrical corner.



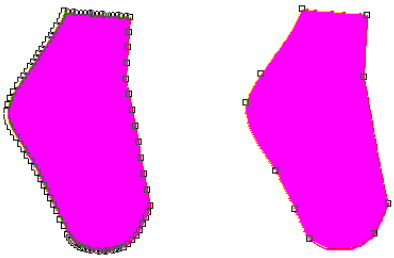
You can't use the Close Curve button to join nodes in two different curves. Instead you need to select the two curves you want to join, then use the **Tools/Join Curves** menu command, which will add a straight line between the last and first points of the two curves. To close the resulting curve or change it in any way, use the Curve toolbar.

 Finally, if you want to open a curve or break a curve into pieces you select the node where you want to create the break and click on the **Break Curve** button. You can use this as many times as you want to convert a connected curve into separate segments. Notice that when you first break a curve the two control nodes are in exactly the same location and so the curve may still look as if it is connected. If you drag one of the control nodes away you will quickly see that it isn't.

## Cleaning curves

Vector clipart is made up of curves that you can edit using the Node tool. This is the best way of customizing it to fit with your drawing. The problem is that often when you ungroup a clipart drawing and try to edit the curves that make it up, you discover that there are far too many nodes on even a simple curve.

This overabundance of nodes only matters if you want to edit the curves. You could use the Node tool to delete unnecessary nodes but it makes more sense to select the curve and use the **Tools/Clean Curves** command. This scans along the curve and removes any node that isn't really needed to determine the shape of the curve. Afterwards, the result should be a curve with a smaller number of nodes and one that is much easier to work with.



# Converting to Curves

Now that you know how to edit a curve, you may wonder how you can do the same things to a QuickShape, or to text for that matter. The problem is that the Node tool affects a QuickShape object and a text object quite differently from the way it edits curves. Most of the time this is exactly what you want, but occasionally it would be nice to edit an outline as if it were a simple curve. The solution is the **Tools/Convert to Curves** menu command or the **Convert to Curves** button on the Standard toolbar.

Once a QuickShape or a text object has been converted to curves, you can edit its outline using the Node tool—but it loses all of its special properties. Converting text to curves is one way of incorporating letter shapes into designs, and converting QuickShapes provides you with a starting point for your own shapes.

When you convert an object to curves the outline is automatically subjected to a Clean Curves operation to reduce the number of nodes and make it easier to edit. If you like, you can turn off this feature on the **Tools/Options.../General** tab.

# Curves and Shapes Project

Having worked through a lot of very small examples, it's time to put various techniques together and actually create a whole drawing. So save your test work and choose **File/New** to open a blank document.

One of the best things about using DrawPlus is that even if you can't draw with pencil and paper, you will be able to create drawings that look just the way you imagine them. The most important thing to realize is that you don't work in the same way as a traditional artist would create the same drawing.

This may sound obvious because you are working with a computer, but at first it is difficult not to think in terms of drawing and rubbing out your mistakes—don't! Using DrawPlus, you assemble a drawing from small objects that you edit to make them just right. So stop worrying about how to draw like an artist and discover how to draw with DrawPlus!

# A Simple Map

Drawing a map of where you live or work is something most of us have to do from time to time—usually in a hurry! If the idea of drawing a map sounds like hard work with lots of lines to put in the right place, then don't worry because DrawPlus makes it easy.

The first part of our map is a rough sketch of the roads, and for this we will need to use the Freehand tool, the one that looks like a pencil (you may remember it from earlier in the chapter). It not only looks like a pencil, it works like one too. To draw a line, you simply move the mouse while holding down the mouse button. Try it out again with a few freehand scribbles.

Scribbling is fun and easy but you also need to be able to keep it under control. Practice drawing some curves and alter the speed with which you move the mouse. The slower you draw, the more detailed the line becomes. Faster, larger movements produce smoother curves. Don't worry about drawing accurate curves, though, because it is very easy to edit what you have done.

When you have finished experimenting you will want to clear the page. To do this select all of your lines, press **Ctrl+A** (or choose **Edit/Select All** and press the **Delete** key.

## Roads under construction

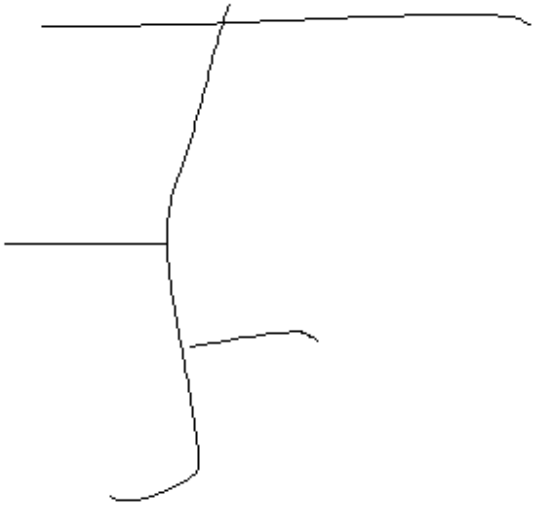
Now use the line tools to sketch some lines that represent the roads closest to your house or office. You don't have to copy our illustrations—in fact, you can try to improve on them!

 Use the Freehand tool when the roads are irregular

 and the Straight Line tool for any roads that are regular.

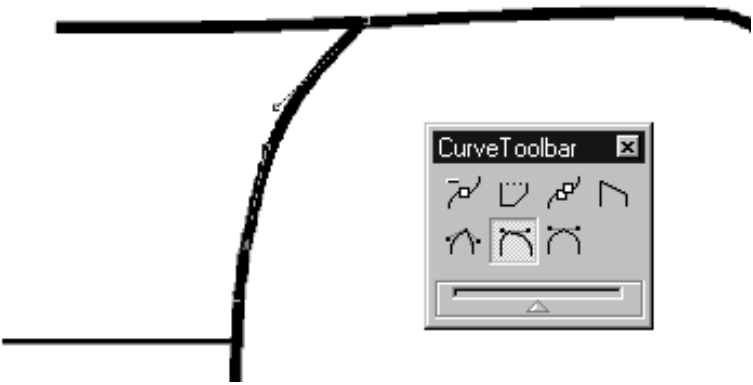
Holding down the **Shift** key constrains straight lines to angles of 15 degrees.

Draw each road as a separate line. The result will probably not be exactly what you hoped for, but don't be panicked into erasing the sketch—unlike a scribble on paper it can be edited to look good!



## Road improvements

Even if you are using different colors for types of road, it is helpful to use line weight (thickness) to distinguish the major roads from the minor ones. This is easily done by selecting each of the lines representing major roads and choosing a suitable weight, such as 5pt, from the Line Weight box on the Studio's Line tab. Repeat for the lines representing the minor roads, but using a thickness of 2.5pts.



Use the Freehand or Straight Line tools as discussed earlier in the chapter to redraw any sections of road that didn't turn out quite right. Select the line first with a selection tool, then click anywhere with the line tool to "cut" the line at that point and insert a new section.

You can also use the Node tool to edit the lines to give them the correct curves and make them join at the right places.

For example, delete surplus nodes to clean up lines that have accidental bends. Select each of these nodes in turn and choose the **Delete Node** button from the Curve toolbar.

Using the Node tool you can manually select any of the nodes or segments and move them to change the shape of the line. So if the line doesn't stop quite where it should, just pick up the end node and drag it where you want the line to finish.

## House building

To show the exact location of your house or office, we need a symbol for the building. You could look for one, or put one together, from QuickShapes but here we will use the Straight Line tool to review how to construct a shape from line segments.

Make the snapping grid visible with **View/Layout Tools/Snapping Grid** before embarking on drawing a house. You can either keep snapping on, or turn it off, using the Snapping button on the Hintline toolbar. Either way, the dots will serve as a guide.

Choose the Straight Line tool from the flyout, then click and hold down the mouse button at the starting point of the line and drag to its finishing point. The nodes at either end of the line appear when you release the mouse button. It is important when you are creating a closed shape from a line that the line ends meet! Watch the cursor. The small "+" sign indicates that clicking and dragging will extend the line, and the small box tells you that clicking in that spot will complete the closed shape.

Draw five straight line segments, connecting them to extend the line as you go, to make a house shape. Finish the last line (closing the shape) at the same node that begins the first line.

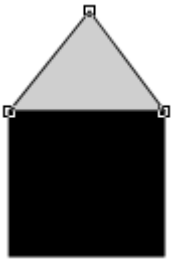
You'll know you've successfully closed the line and created a shape if it fills right away with the default fill.

The house can be drawn anywhere on the page or pasteboard because it's easy to move it to its final position. You can also change work at any zoom level that makes it easy to draw because the figure can be scaled to any final size. Just select it with the Pointer tool and drag from a corner handle. Objects are often easier to draw large and in this case you can use the dots of the snapping grid to align the points of the house shape.

## Tearing the roof off

Let's try filling the roof with a different color to distinguish it from the rest of the house. To do this we need to make two objects from the one we have now. We'll break off the roof and house from each other, then close each of the separate shapes. First, select one of the nodes that join the roof to the house and click the **Break Curve** button on the Curve toolbar. At this point, although it may still look as if only one node exists, you will see the house lose its fill since only closed shapes can be filled. We now have a line with its start and end nodes at exactly the same point.

Repeat this on the other connecting node so that the roof is completely separate. At this point you could move it away from the house shape if you wanted to. Instead, close the roof as a separate object by selecting either of its two segments with the Node tool and clicking the **Close Curve** button. The roof will fill as a separate object. Do the same to the base of the house.



Repeat the closing procedure for the house shape. Now you have two closed shapes with the same fill. Select either one and apply a new fill color using the Fill tab.

Save your work—we'll return to the map mini-project in Chapter 8. Right now, it's time to move along and consider other kinds of objects.

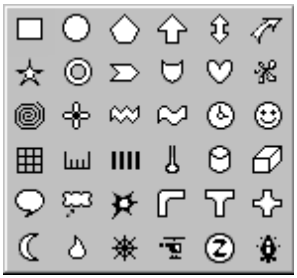
# 6

# QuickShapes, Connectors, Text, and Pictures

# Introduction

You've already seen how a DrawPlus drawing is made up of several different kinds of objects. In Chapter 4, "Working with Objects," we introduced the three basic object types and saw how to change the way they look by resizing, positioning, and rotating. Chapter 5 dealt extensively with the first type of object (lines). This chapter will focus on the three others—QuickShapes, onnectors and text objects—and explore a variety of ways to customize them. In addition, we'll take a quick look at OLE objects that allow DrawPlus to be linked to other Windows applications.

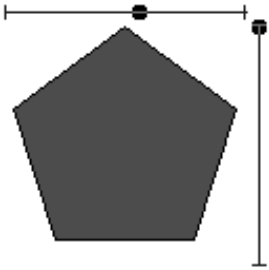
# QuickShapes



**QuickShapes** are pre-designed objects that you can instantly add to your page, then adjust and vary using control handles. The QuickShape flyout contains a wide variety of commonly used shapes, including boxes, ovals, arrows, polygons and stars.

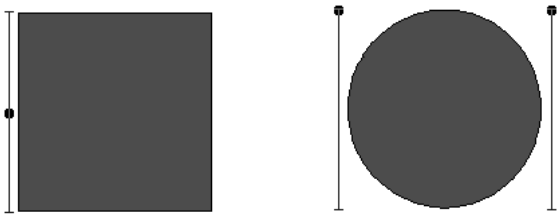
Each QuickShape in the flyout has its own built-in, "intelligent" properties. In some cases, varying the QuickShape produces related shapes, such as forms of transport or zodiac signs. In others, you can drag to customize a basic shape like a polygon or star.

When you select most QuickShapes, rather than being surrounded by a selection box and handles, they display one or more **sliding handles**, which are used to control aspects of the shape. Some QuickShapes have more handles than others. For example, a QuickPolygon has two:

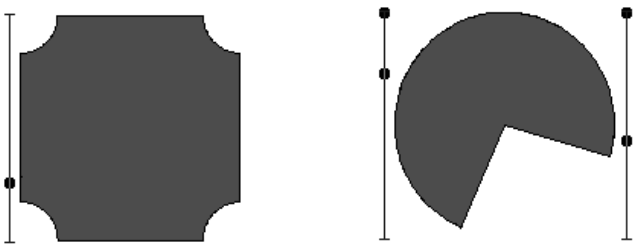


## Editing QuickShapes

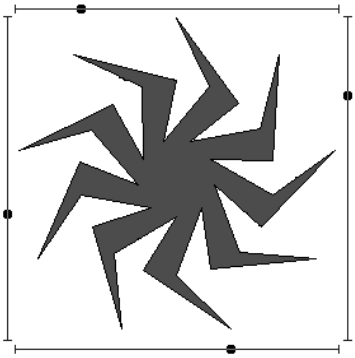
The previous chapter introduced the Node tool and explained how it works with lines, curves, and shapes made from lines. The Node tool is selected automatically after you finish drawing most QuickShapes, but it works somewhat differently here. To vary a QuickShape, you simply drag one of its handles with the Node tool.



For example, try creating a QuickBox and dragging its handle. You'll discover that it produces round corners—either inward- or outward-pointing. If you drag on the first of the QuickEllipse handles you will find that it opens up a segment; the second handle rotates the position of the "opening."



Some QuickShapes have more than two handles. For example, the QuickStar has four, which allow you to create everything from a traditional five-pointed star to an incredible crystal snowflake!



The best way to find out about the amazing range of QuickShapes that's available is to experiment with each of them. Check the HintLine for a brief description of what each handle does. Try them out and make sure you see the effect of changing each of the sliding handles.

Clever though the QuickShapes are, it is worth remembering that they also behave like standard objects. You can still use the selection tools to move, rotate, scale, and change their fill and line properties. Even after rotation and shearing, the sliding handles can still be used to modify the shape.

For some exciting ways to use QuickShapes for creating animated Web graphics, see Chapter 10.

# Connectors

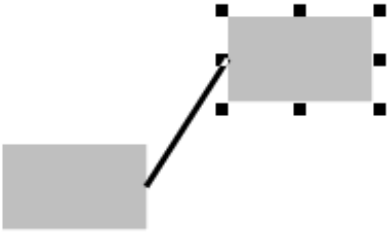
**Connectors** are special lines that you can anchor to objects, where they remain attached even if one or both objects are moved or resized. Using connectors, you can easily create dynamic diagrams and charts that show relationships, such as family trees, organization charts, and flow charts. If you need to rearrange the elements, the connections are preserved. Let's take what you've just learned about QuickShapes and see how easy it is to apply connectors.

If you've been experimenting with QuickShapes, you can use any two that are already on your page. Otherwise, draw two separate QuickShapes now. For illustration purposes, we'll assume you have two QuickBoxes side by side as shown below, and refer to them as the "left" and "right" shape.


Click the **Connection Tool** flyout button on the Drawing toolbar and select the first button for the **Direct Connector** tool. Immediately, default **connection points** become visible on all page objects. In a moment, we'll see how to add new connection points... but let's move right along and connect the dots.

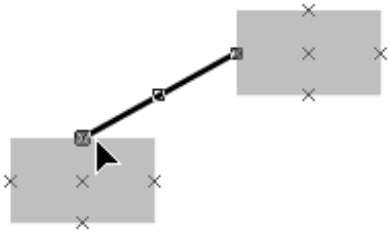
Using the Direct Connector tool, click the connection point on the right edge of the left shape. Drag to the right and release the mouse button when the pointer is over the connection point on the left edge of the right shape. (You'll see a box appear around the point when a connection is imminent.) A direct connector appears between the two connection points.

Now choose the Pointer tool; the connection points vanish, but the connector remains. Click the right shape to select it, then drag the shape to a new position. The connector follows!



We could have attached either end of the connector to any of the visible connection points, or even kept it free-floating (in which case it would be anchored to a point on the page). To re-anchor, simply select the connector with the Node tool and then drag one of the end nodes over a connection point of the object.

With one shape slightly above the other, choose the Node tool and select the connector; the connection points become visible again. Click the connector's left end node and drag to the connection point on the left shape's top edge. Release when the small box appears, and the connector re-anchors.



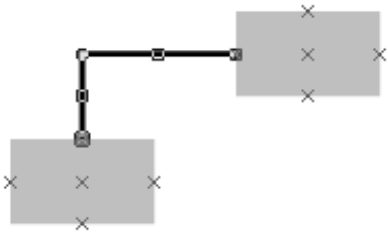
By the way, the central connection point is special. It's called the **Auto Select** connection point because a connector which was anchored there will always draw using the connection point that results in the shortest connector—in other words, the one nearest to the other object. Try using the Node tool to re-anchor your connector to the Auto Select point on both shapes (notice how the object highlights when the node is over the Auto select point). Now move each object around freely and you'll see how the auto select behavior works.

What if you want to anchor a connector to a specific point on an object, but it's *not* one of the default connection points? That's where the **Connection Point** tool comes in handy.

 Click the Connection Tool flyout again and this time select the fourth button. This time, the default connection points only appear on any selected object(s), so you may or may not see any. So click one of your shapes to select it and display its connection points - an "X" cursor is shown when the mouse is over the object. Then click somewhere in the interior of the shape and a small symbol appears denoting a new, custom connection point. You can add custom connection points anywhere but typically you will want them positioned around the perimeter of an object.

You can select and move custom connection points with the Connection Point tool. To delete one, simply select it and press **Delete**. Otherwise, they function basically like default connection points.

 The **Right Angle Connector** tool creates connectors that use one vertical and one horizontal segments so the connector shape is a right angle. Delete your existing connector and use the right angle connector tool to create a new connector.

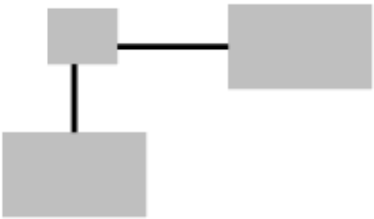


When creating a right angle connector, the first segment of the line is always vertical and the second segment is always horizontal. So, if the connector you created has the segments the wrong way round, delete it and try again, this time reversing which connection points are used for the start and end point of the connector.

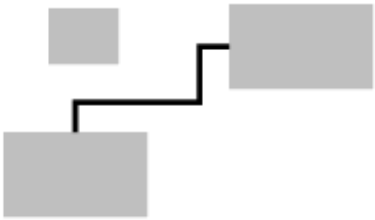
Suppose you decide you should have drawn your right angle connector using a direct path. Rather than redraw, you can convert. Select the connector and then right-click it. Choose **Connectors** from the context menu and select **Direct Connector** from the submenu and the connector redraws using its new shape. Now right-click the connector and change it back to a right angle connector.

When creating connectors, you can specify either Direct or Right Angle—or you can utilize the most powerful of all, the **Auto connector**. Auto connectors will automatically assume a shape of the best fit for a particular path, given the objects' placement and the connection points you've chosen. They only use horizontal and vertical line segments and can even route themselves around objects that are in the way. Let's try another experiment.

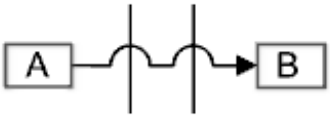
Draw another small QuickBox where the current connector makes its right-angle bend. Because the connector is still of the standard Right Angle variety, its path doesn't change.



Now change the connector to an Auto Connector: right-click it, choose **Connectors**, then **Auto Connector**. Immediately the line finds a way to avoid the obstructive box! The auto-connector will redraw to a new shape when ever any objects are moved or resized and the shape it assumes will use as many line segments as necessary to find a path between the two objects.



Auto connectors are intelligent in another way: they know when they've crossed one another, and form "bridges" as needed to keep the connector lines separate, as shown here:




The **Layout** tab of the **Tools/Options...** dialog includes settings that let you adjust the allowed separation between Auto connectors and page objects, as well as the size and spacing of bridges. (Search "connectors" in the online help Index.)

For a final demonstration of how versatile connectors can be, right-click the small box that was getting in the way. Choose **Connectors**, and then uncheck **Obstructive Object**. Now the Auto connector ignores the box and resumes its earlier, simpler shape. New DrawPlus objects are always obstructive by default—but you may wish to turn the property off in individual instances.

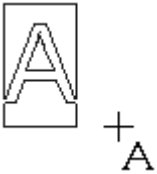
You can edit connector properties like thickness, color, and line ending just like those of standard lines, as covered in the next chapter. And you can edit the shape of connectors using the Node tool (again just like regular lines, as covered in the previous chapter) if a different shaped path is desirable. Reshaped connectors become "Custom Connectors," losing their Auto properties so you may need to adjust the route to avoid other objects. On a stylistic note, a given diagram or chart will look better if you can find one suitable connector style and use it consistently, rather than trying to exploit all the options in one document.

Take a look at the Library tab's "Connecting Symbols" category for an array of basic shapes and chart symbols that you can use as starting points.

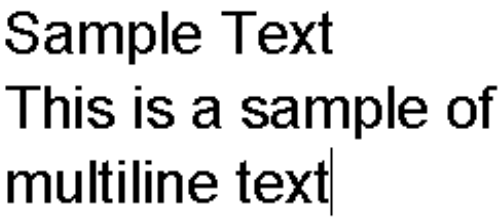
# Text


Although text objects might seem different from other objects, in many ways they work in a similar manner. You can place text anywhere on the page by selecting the Text tool and clicking at the desired location. A blinking text cursor appears and you can type directly on the page.

If you simply click on the page with the Text tool, the cursor will be at the default size, but if you click and drag you can size the text cursor before you type.



If you press the **Enter** key while typing, you can type multiple lines of text as a single object.




Once you have finished entering text you can select it using either the Pointer tool or the Rotate tool and modify it just like any other graphics object. You can scale, rotate, skew, move, and copy it, and apply fills, line styles, and transparency (see the next chapter).

## Text properties

Text objects in DrawPlus have the same text attributes you would expect to find in any text application—including font, pointsize, style, line color, fill color, line weight, letterspacing, line spacing (leading), and alignment. New text automatically takes on the default settings for text, which are separate from those for lines and QuickShapes. You can define some of these properties using the Text tab, others by using the built-in **Edit Text window**.

Click the Text tab to show the available controls. In Chapter 4, we tried creating some text and you saw that the font list lets you preview font appearance as well as apply a font to selected text. The pointsize drop-down list shows the vertical size of the selected text in points. (The point is a traditional measure of the size of text; there are 72 points to the inch.) If you've changed the size of text by dragging its handles, you may end up with distorted text that doesn't correspond exactly to the font you have chosen at any pointsize.

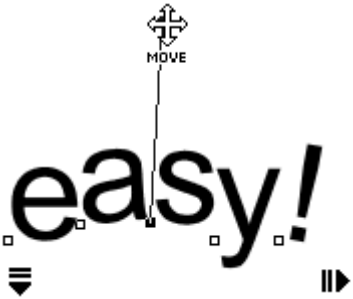

You can use the drop-down list to select a specific size.


If you click on the font style buttons then the currently selected text will be displayed with the selected effect.

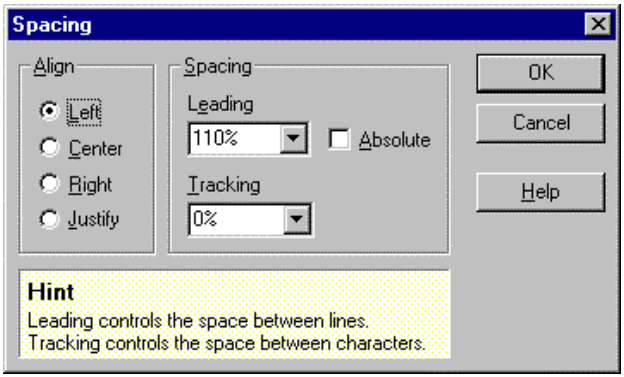

The four alignment buttons let you align text objects with multiple lines. If you click on the first button the text is left aligned, the second centers each line, the third right aligns the text, and the final button justifies the text.


Selecting a text object with the Node tool displays right- and down-arrow control handles. To set tracking (space between characters), drag the right arrow.


To adjust leading (space between lines), drag the down arrow. To control character positioning precisely you can drag the small square handles at the bottom left of a character. To move a single character around, drag the handle just to its left. To rotate a single character, click its handle and drag the upper node (blue dot) to either side. This is great for creating special effect and logos and the text can still be edited with the Edit Text dialog box (see below).

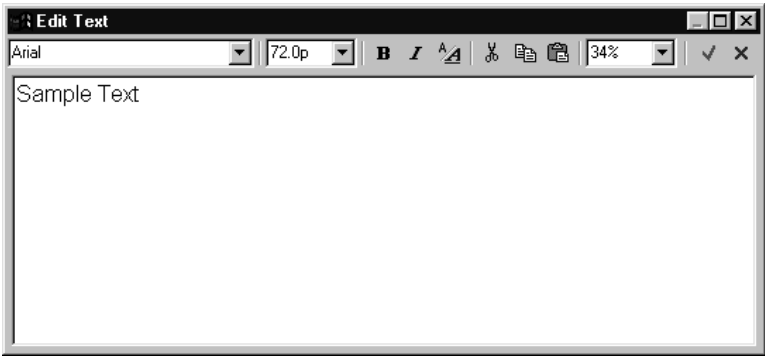



Right-clicking on selected text and choosing **Spacing...** brings up a dialog that lets you set text alignment and fine-tune leading and tracking. You can set the width of each character as a percentage of its standard width or in absolute units.




## Editing text

If you want to edit the actual text of a text object then you can either double-click on it with the Pointer tool or click on it using the Text tool. The Edit Text window opens and you can enter new text or change the existing text.



The Edit Text window also lets you apply different effects: fonts, pointsize, bold, and italics. Select the letters or words you want to change with the cursor, just like you would in a word processor, and then use the buttons on the toolbar to apply properties to it.

 The **Draft** button is used to switch between draft view, useful for viewing a lot of text at once, and formatted view, which shows how the text object will look on the drawing.

When formatted view has been selected, the Zoom box allows you to view it at a number of zoom levels.

To return to DrawPlus, click:

 the **Accept** button to update, or

 the **Cancel** button to abandon changes.

## Special text effects

DrawPlus includes a bevy of features that you can use to create incredible text effects:

- **Fill and transparency.** Explore the wide range of possibilities available in the Studio.
- **Shadows**. Using the Shadow flyout on the Standard toolbar, it's easy to add a drop shadow to a text object, then use the dialog to customize it.
- **Combination effects**. Use **Combine** or **Join** to create "mask" or "stencil" effects and new hybrid shapes incorporating text and/or other objects.
- **Text on a curve.** Use the Curve Text Wizard or the Curve Text flyout button to make text conform to a curved baseline.
- **Enveloped text.** Use the Envelope Wizard or the Envelope flyout button to flow text into any outline shape.
- **Text art.** Explore the customizable designs available on the Studio's Library tab.

We'll be looking at fill and transparency in Chapter 7, and the other special effects in Chapter 9.

# Pictures

There are two basic types of pictures that you can place into DrawPlus. **Bitmap** pictures (including .BMPs, .GIFs, and .JPGs), also known as **paint** or **raster** images, are built from a matrix of dots ("pixels"), rather like the squares on a sheet of graph paper. They are typically created either by using a paint type program such as Microsoft Paint, or by using an image scanner to convert photographs. **Draw** pictures, also known as **vector** graphics, are resolution-independent and contain drawing commands such as "draw a line from A to B." These are like DrawPlus drawings, made of many individual objects grouped together, and you can edit them in the same sort of way.

For more information on specific bitmap formats, see Chapter 10.

When you import a bitmap into DrawPlus, it becomes the **Bitmap fill** for a new QuickBox object. You can add these bitmaps to the Bitmap fill gallery to be used as fills for other objects.

When importing a vector graphic, DrawPlus converts it into individual line/shape objects, and you have the choice of ungrouping the objects in order to edit them further, or leaving them as a group.

Either way, the imported picture ends up as an object you can select, move, scale, shear, rotate—and even crop using the **Envelope flyout** on the Standard toolbar.

Much of the work of creating or editing a bitmap is typically done in a separate program called a **paint editor**. The next chapter, "Line, Fill, and Transparency," includes more information about manipulating bitmap-filled objects in DrawPlus, and online help has all the technical information you'll need on exporting to different formats. Here, we'll focus on the mechanics of getting a picture into DrawPlus.

Bitmap pictures are collections of colored dots and are not composed of graphic objects. If you can see a square in a bitmap picture it is a colored area in the shape of a square. You can't select it and change it.

## Importing pictures

DrawPlus lets you import any industry-standard paint-type file and a wide variety of draw-type files. Click the **Import Picture** button on the Drawing toolbar. Use the file selection dialog to browse files and select the file to import, then click **OK**. The dialog disappears and the mouse pointer changes to the Picture Size cursor. What you do next determines the initial size, placement, and aspect ratio (proportions) of the image.

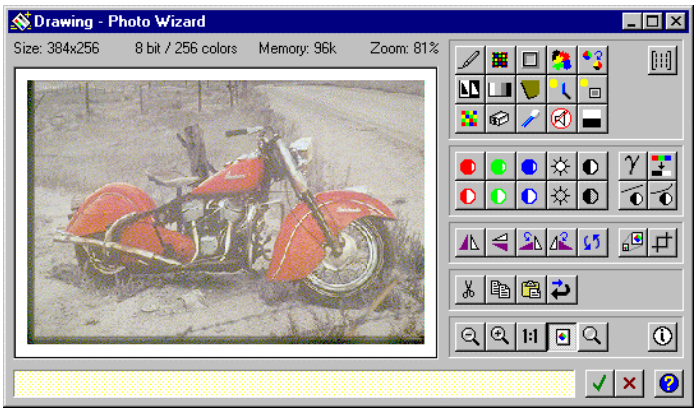
- If you want to insert the picture at a default size, simply click the mouse.
- If you prefer to set the size of the inserted picture, drag out a region and release the mouse button. (Normally, the picture's aspect ratio is preserved. To allow free dragging to any aspect ratio, hold down the **Shift** key. To constrain the aspect ratio to a square, hold down the **Ctrl** key.) You can always resize a picture as required, after it's been placed, by dragging its handles.

If your scanner provides TWAIN support, you can scan pictures directly into DrawPlus. To set up your TWAIN scanner for importing, see the documentation supplied with your scanner for operating instructions. To import a scanned image, choose **Scanner** from the Insert menu, then **Acquire** from the submenu to open a file selection dialog.

When you import a bitmap picture into DrawPlus, it becomes the bitmap fill for a new QuickBox object. As with other object fills, you can add these bitmaps to the Bitmap fill gallery to be used as fills for other objects (see Chapter 7). For fun special effects, try using Photo Wizard, the built-in DrawPlus photo editor, to adjust an object's bitmap fill (see the next section).

# Photo Wizard

If you've imported a photographic image, or you're looking for a way to enhance Bitmap fills, you will appreciate the extra power of Photo Wizard, the built-in special effects editor for bitmaps. Photo Wizard lets you alter the picture's appearance in a variety of unusual ways. To run Photo Wizard, all you have to do is to double-click on the bitmap-filled object, or access it from **Tools/Photo Wizard**.

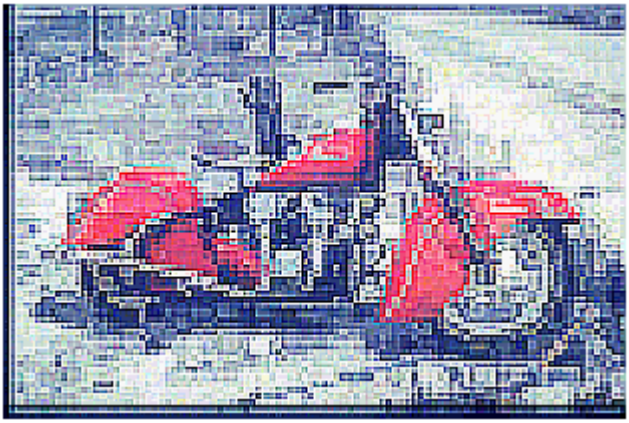


All of the tools work in the same way as DrawPlus and you can see their tooltip descriptions by moving the cursor over them.

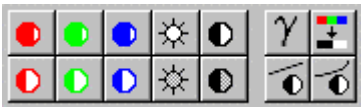
 Click the **Help** button for self-contained online help on Photo Wizard.

You apply a tool by clicking its button and you can set precisely how it works by double-clicking it.

The top panel of tools are concerned with special effects and improving the look of an image. For example, the Mosaic filter will break the picture up into small squares and make it look like a tiled mosaic.



If you are trying to improve the look of a scanned photograph, try the Sharpen filter and the Remove Noise filter. There are other filters for improving the look of photos in the second panel.



These filters control the more technical details of a photo. For example,  and  increase the brightness and contrast of the photo much as the brightness and contrast controls on your TV affect its picture. You can alter the color balance and even convert a color picture into black and white.

The third panel of buttons flip, rotate, resize, and crop the photo.

The next panel includes the familiar Cut, Copy, Paste, and Undo tools.

The final panel controls the zoom. One of these buttons is selected according to the current zoom factor.


The tool at the far right will draw a graph of the colors in the photo. This can be a useful guide to how to adjust the color balance and contrast.

To return to DrawPlus, click:

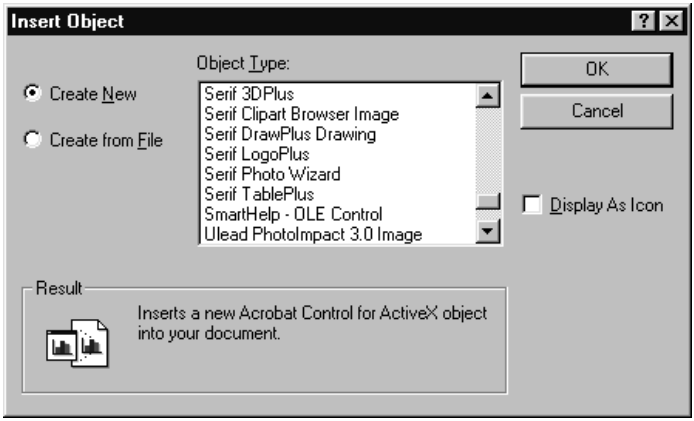
 the **Accept** button to update, or

 the **Cancel** button to abandon changes.

# OLE Objects

As well as pictures, you can insert a very wide range of object types into your DrawPlus page. Most Windows applications support a standard called OLE—Object Linking and Embedding—which allows objects created by one application to be inserted into another.

The command **Insert/Object** produces a dialog box which lists all of the OLE supporting applications installed on your machine.




You can edit an OLE object by double-clicking on it. Alternatively you can use the **Edit/Object** command, which will contain a new item corresponding to the name object you have inserted.

Editing an OLE object is something that is delegated to the application that created the object. So, if you insert an Excel spreadsheet object into a page and then double-click on it, Excel is started and you will see Excel's menu and commands.

### DrawPlus drawings as OLE objects

As well as being able to insert OLE objects into a DrawPlus drawing, you can also insert a DrawPlus drawing into another application that supports OLE. For example, if you are preparing a document with a desktop publisher like Serif's PagePlus you can insert a drawing from DrawPlus into the layout to illustrate it. To do this, click the Insert DrawPlus Object button on the PagePlus Tools toolbar. Then click again on your PagePlus page, or drag out to indicate the desired size of the DrawPlus object.

Alternatively, you can select the object (or all objects using **Edit/Select All**) and then copy to the Clipboard using **Edit/Copy**. In the other application the drawing can then be inserted using **Edit/Paste** or **Edit/Paste Special**.

Or you can use the other application's **Insert/Object** command to insert a new DrawPlus object or a drawing already saved in a file.

It doesn't matter how the DrawPlus object gets into the document; double-clicking on it will start DrawPlus and allow you to edit it.

## Exporting drawings as pictures

Exporting a drawing as a picture is one way of working with applications that don't support OLE. When you save a drawing DrawPlus uses its own formats (.DPP for drawings and .DPA for animations) to store the information. To be able to read the drawing into another application it has to be saved in one of the many standard formats. You can do this using the **File/Export...** command.

There are lots of formats to choose from, but notice that in general you will not be able to read the exported file back into DrawPlus and edit as easily as the original. If you export the drawing to a bitmap picture any details of the objects it contained are lost forever. So if you want to work with your DrawPlus drawing again make sure you save it in DrawPlus format as well as exporting it in a format that the other application can use.

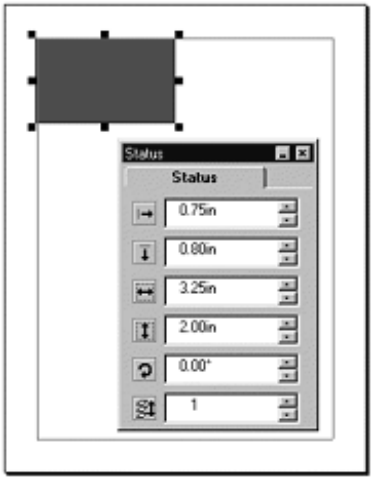
For more information on exporting, see Chapter 10's section on "Optimizing Graphics."

# Building a Business Card

Now that we know more about QuickShapes, text, and importing pictures, we can get down to serious work and design a business card. It's likely that you will want to work on one of your own rather than reproduce the sample we've produced. So, rather than take you through it step-by-step this time, we'll start with a finished drawing and then look in detail at how it was produced.


## Working to size

A typical business card is credit card-sized. Working on your normal paper size, the first thing to do is to use the QuickShape tool to draw a rectangle to the size required. Then open the Status tab, either by clicking on the Status tab button on the HintLine toolbar or right-clicking on any toolbar or Studio tab label and checking **Status tab** on the menu.



Fill in the values you require for width and height in the edit boxes of the Status tab. Close the Status tab using the Windows close box in the top right.

You need to be able to see your business card close up as you work on it. There are a number of zoom options on the HintLine toolbar. Clicking the **Actual Size** button is one solution. The other is to click on the **Zoom tool** and use it draw a box around the area that you want to fill the entire screen. This makes your view rather larger than life-size, which makes it easy to deal with fine positioning.

## A suitable background

Next consider the color of the card that you are going to use when you finally print your business card. Although this background will not itself be printed, it's important that you adopt a similar shade while working on the design in order to choose the correct colors and shades for other elements. Here we filled our QuickBox with a cream color by clicking a thumbnail in the Studio Color tab's solid color gallery.

Make sure to have the object selected before you apply changes from the Studio galleries. If no object is selected, your Studio choices only change the default settings for the next new object you create.

New QuickShapes are created with a default line of "None." In this case, it will be helpful to see where the edge of the card is. To do this, select the Studio's Line tab and choose "1.0" (instead of "None") in the Line Weight box. Assuming black is currently the default line color, that's all you need to do. To change the line color, select the Studio's color tab, right-click on the desired color and select Set Line Color.

## Putting QuickShapes to work

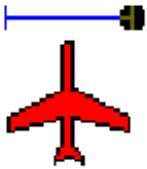
As you can see, there's a lot more to QuickShapes than drawing simple boxes. A box can be instantly changed. To achieve rounded corners on the business card, simply select the box with the Node tool and drag the sliding handle (which appears on a line to the left of the box) upwards. If you look at the HintLine while moving the node handle it tells you the changing radius of the corner. We used a value of about .3 inches.

Given the fictitious company name "Arrow Air," an arrow is an obvious shape to incorporate in the design. There are various QuickShapes for arrows.

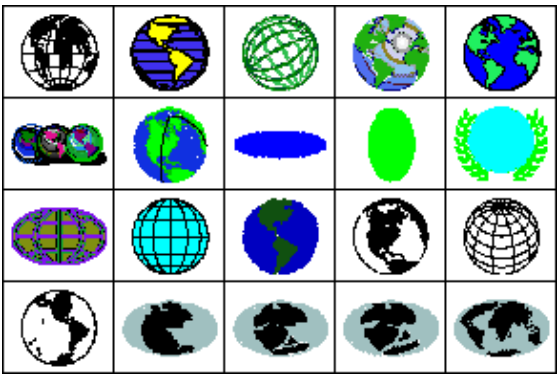
This one is based on the QuickArrows shape, and the Node tool was used to select one of the variations supplied. We drew the shape on the pasteboard and it appeared with the current default fill color, black. (Your defaults may differ.) Then we moved and resized the QuickShape into a more or less final position.

Use the Snapping button on the HintLine toolbar to turn snapping off to give more flexibility in positioning objects in this small working area. How to control the snapping grid will be discussed in Chapter 8.

The airplane in this design is also from the QuickShape palette. Select the **QuickTransport** button and click on the page. It starts off as a helicopter but if you then drag the sliding handle to the left you'll obtain this airplane. Give it a solid black fill and this time lighten it by dragging the Tint slider up to about 50%. (You can also type exact values next to the slider, then press **Enter** to update the object.)



Clipart is a good source of graphics for a design like this one. We dragged and dropped in a clipart globe, then sized and positioned it in DrawPlus.



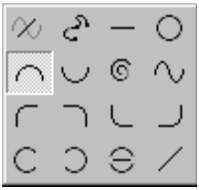
## Adding text


Text is obviously a very important element in a business card design. It needs to convey information clearly, but can have decorative value itself. We added text with the Text tool, Text tab, and Edit Text window as described earlier in this chapter.

First, we entered the company name, which was left at the default of 24-point Arial. Next, we entered the personal details as a four-line text object using two different fonts (Arial for the name and e-mail address and Times New Roman for the phone and fax numbers) and different pointsizes (11pt for name and address, 9pt for phone and fax numbers, and 10.5pt for the e-mail address). Bold and italics were used throughout. Arial and Times New Roman are standard Windows fonts. You can choose from any available fonts on your own system.

Initially, we typed text onto the page. Then the Edit Text window was used to alter the entries slightly, and to type the message, which was set to 14pt Balloonist SF.

Then we used the Curve Text tool (see Chapter 9) to give the text a semi-circular shape. It was then moved and sized into position on the drawing.



This completed the design and the business card drawing was saved to disk.

## Using the design elsewhere

It is a simple matter to use the drawing as an OLE object in other applications, simply by copying it to the clipboard and then pasting it into an open document in the other application.

Although we started with the idea of creating just a business card, the design has potential for use in other documents such as letterheads, faxes, and memos etc.

7

# Fill, Line, and Transparency Effects

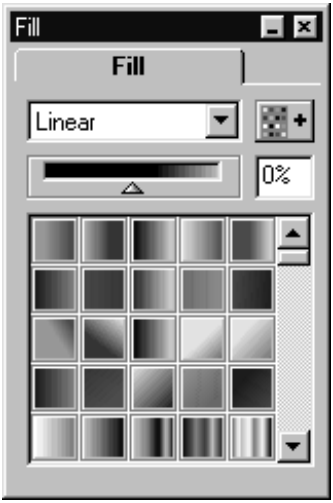
# Introduction

We've seen how to create and manipulate all the basic types of objects—lines, shapes, QuickShapes, and text. Along the way, we've had occasion to use the Studio's Color tab to apply different solid color fills. But there's much, much more in store in the Studio. It's time now to examine how you can use the Fill, Color, Line, and Transparency tabs to apply a remarkable variety of effects to all kinds of objects. Follow along and work through the examples, and you'll emerge with a new awareness of creative drawing possibilities.

# Fill settings

## The Fill tab

Click the Studio's **Fill** tab and let's look at its elements. Here's what the tab looks like if you drag it (by its "Fill" label) to detach it from the Studio as a floating window:

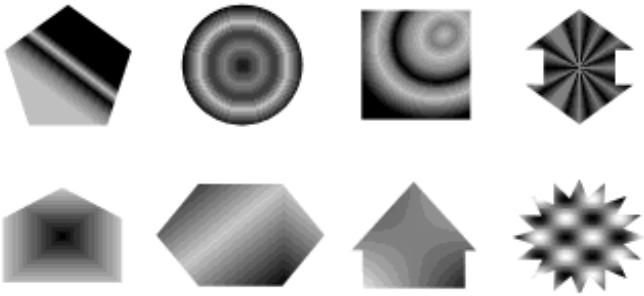



The most conspicuous feature is the **gallery**, a scrolling array of different fills. Just below the label, there's the **Fill Type** drop-down list, which lets you select a particular category of fill (we'll cover those categories in a moment). Above, you can see that the Linear category is currently selected. Next to the list is the **Add Fill** button, which lets you add fills to the gallery, and just above the gallery are the **Tint** slider and **Value** box, which together let you vary the shading of a fill on a particular object.

## Types of fills

Any closed shape, such as a closed curve or QuickShape, and any text object have an interior region that can be filled. In Chapter 3, we briefly looked at **solid** fills, those that use a single color (set by using the Color tab), and we've mentioned that the default fill is solid black. Later in this chapter we'll discuss how to add your own custom colors, or change those already in the Color tab's gallery.

All the other fill types are located on the Fill tab. If you click the Fill Type list, you'll see them listed at a glance. Let's take a moment to run through them.



There are eight fill types collectively known as **gradient** fills, because they provide a gradation or spectrum of colors between two or more "key" colors. The fills, shown above, are named (top row) **Linear**, **Radial**, **Ellipse**, and **Conical**; (bottom row) **Square**, **Three-Color**, **Four-Color**, and **Mesh**. As a group, gradient fills all behave in basically the same way. However, mesh fills are especially complex and will get a separate section in this chapter.

**Bitmap** and **Plasma** fills (above) apply bitmapped images or patterns to the object. You'll recall from the previous chapter that bitmap pictures you import into DrawPlus become the Bitmap fill for a new box shape. So it may help to think of Bitmap fills as named "pictures" that fill shapes. Plasma (or "fractal") fills use randomized patterns, useful for simulating cloud or shadow effects. As we'll see, Bitmap and Plasma fills have some unique properties.

## Applying a fill

Applying a fill is easy, whether you're using the solid colors from the Color tab or the more complex fills from the Fill tab. Let's try it. Click the QuickShape tool and select a QuickBox shape, then drag out a box on your page. Notice that it immediately fills with the default fill (we'll assume it's still solid black). Holding the **Ctrl** key down, click and drag on the box to create a copy. **Shift**-click both boxes and **Ctrl**-drag the multiple selection to give you four boxes. Repeat this cloning a couple of times until you have at least eleven identical boxes.

Select the first shape, then display the Color tab. Click any light-colored fill thumbnail and immediately the selected object takes on the new fill.

Now select the second shape. This time, display the Fill tab and choose "Linear" in the Fill Type list to display the Linear fill gallery, which includes a wide variety of preset fill patterns.

And now for a different approach. Select "Radial" from the Fill Type list. Click any thumbnail and this time drag it onto the page and drop it over the third box shape. Notice that the cursor changed to include a "+" sign when you were over an object.

Continue this test with the remaining shapes, applying the other gradient fills (Ellipse, Conical, Square, Three-Color, Four-Color, and Mesh), and the Plasma fill, each time choosing a preset thumbnail from the appropriate gallery.

We've left the Bitmap category for last because its gallery is a bit different from the others. Above the gallery, you'll notice a Category drop-down list. Clicking here reveals a classification scheme for over 200 supplied Bitmap fills. You can select any category and preview its thumbnails. Each represents a small bitmap file. Choose one and apply it to the last box, completing your collection of sample fills. (They won't look exactly like the selection shown here.)

Once you've applied a fill, you can then use the Fill tab to adjust its **tint** (lightness), **path** (coverage), and/or **color(s)** on the object. We'll use the sample fills to explore these adjustment techniques. You might wish to select all seven fills (drag a marquee around them) and **Ctrl**-drag to duplicate the whole set so you can refer back to the originals. Resize the fills (or adjust the zoom level) so you can work with each one comfortably.

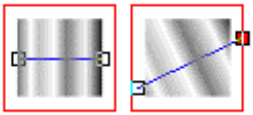
## Adjusting an object's fill tint

Select the solid fill sample object and drag the **Tint slider** to the right. You'll see the fill color brighten as its lightness increases, and meanwhile the Value box provides a readout of the tint percent. At some point, type "0" into the Value box and press **Enter**. Instantly the tint returns to its original value.

Feel free to try varying the tint of fills on the other sample objects.

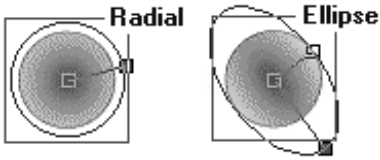
## Adjusting an object's fill path


Understanding the concept of a gradient **fill path** isn't difficult once you've seen it in action. Select the Linear fill sample and choose the Fill tool from the Drawing toolbar. You'll see the object's fill path displayed as a horizontal line across the middle, with a node at either end. Try using the Fill tool cursor to drag the nodes slightly.

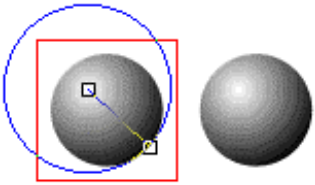


As you drag the nodes, the fill changes position across the object. That's all there is to it! To see the fill path on the other sample objects, you'll need to select each one with the Pointer tool, then click the Fill tool again (the Fill tool itself can't select objects). You can also click on the selected object for a new starting node and drag out a new fill path.

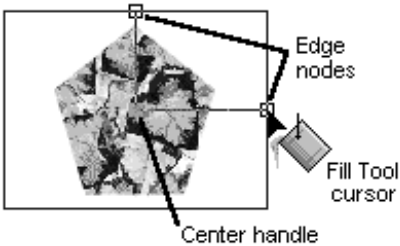
Each gradient fill type has a characteristic path. For example, Radial fills have single-line paths, with the gradient initially starting at the object's center. Ellipse fills likewise begin at the center, but their paths have two lines so you can adjust the fill's extent in two directions away from the center. Radial fills are always evenly circular, while Ellipse fills can be skewed in one direction or another.




Experiment to discover new effects! For example, you can widen or narrow the gradient's extent, even drag either node completely outside the object. Or, for Radial and Ellipse fills on a round shape, try placing the start node near the figure's upper edge, off-center, to create a reflection highlight.



On Bitmap and Plasma fills, you'll see the fill path displayed as two lines joined at a center point. Nodes mark the fill's center and edges. To reposition the fill's center, drag the center node. To create a skewed or tilted fill region, drag one or both edge nodes sideways.

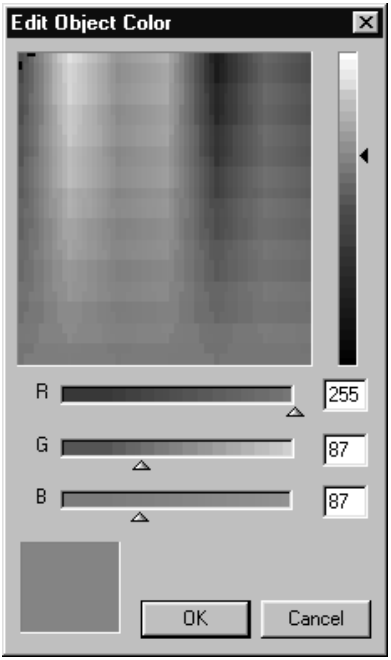



Unlike the other fill types, Bitmap and Plasma fills don't simply "end" at the edges of their fill paths. Rather, they **tile** (repeat) so you can fill indefinitely large regions at any scale. By dragging the edge nodes in or out with the Fill tool, you can "zoom" in or out on the fill pattern.

On any type of fill, holding down the **Shift** or **Ctrl** keys will constrain the fill path in useful ways. **Shift**-drag to adjust the path angle in 15-degree increments, and preserve the fill's aspect ratio. **Ctrl**-drag to constrain *and* reset the origin to the default. On Ellipse fills, **Ctrl**-dragging also sets the gradient's aspect ratio equal to that of its bounding box. On Bitmap and Plasma fills, **Ctrl**-dragging also unskews the fill path and causes the fill to change size in regular increments, including one setting that's equal to the size of the object itself—a quick way to set a Bitmap fill (such as an imported picture) to be equal to the box shape that contains it.

## Adjusting an object's fill colors

Solid fills use a single color—that is, one specific mixture of red, green, and blue—or "RGB value." The other types of fills use at least two. One way of altering the color(s) in a fill after it's been applied to an object is to right-click the object and choose **Edit Object Fill...**. Try this now, starting with your solid fill sample.

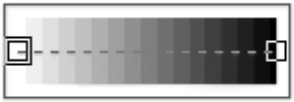



Since the solid fill uses only one color, the dialog used to edit the fill is a standard color selection dialog. You can use the dialog to check or set the specific RGB fill value. Click anywhere in the color space window to define hue and saturation, adjust the value (lightness) using the vertical slider, or set red, green, and blue values by dragging independent R, G, and B sliders or by entering specific RGB values. The sample box at the lower left shows what the new fill color will be. Click **OK** to update the object with the new fill.

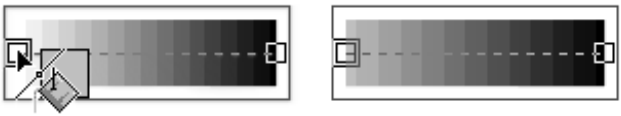
For gradient and Plasma fills, the situation is slightly more complicated. These fills utilize at least two **key colors**, with a spread of hues in between each key color, creating a "spectrum" effect. As with solid fills, you can use a dialog that lets you pick the key colors—but you can also use a more direct method. We'll look at both techniques.

The direct approach is based on the fact that (as noted previously) the Fill tool represents each key color along a selected object's fill path as a distinct node. In effect, each node represents a specific solid color. You can use the Color tab to apply any color to any node. Changing a key color changes the spread of colors on either side of the node, and hence the overall appearance of the fill.

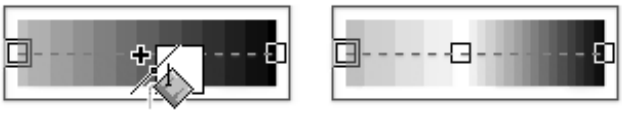
 You can try this now with one of your sample objects. For simplicity, we'll show one with a two-color Linear fill (if yours uses more colors, you can still follow along). Display the Studio's Color tab. Zoom in closely and select the object, then choose the Fill tool. This reveals the nodes that represent the path and the key colors.



Changing an existing key color means applying a solid fill to a node. Either select the node first with the Fill tool and then click a color thumbnail on the Color tab, or drag a thumbnail right from the gallery onto the node you want to change.

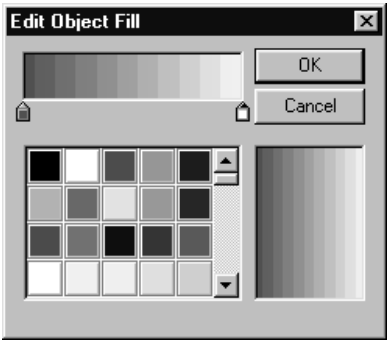


You can add or delete nodes (other than the start and end nodes) to change the complexity of the gradient. Each extra node represents a new key color and adds variation to the spectrum. To add a node, drag from a color thumbnail onto a portion of the fill path where there is no node. To delete a node, select it with the Fill tool and press **Delete**.



And as with altering the placement of the fill by dragging its end nodes, you can alter the placement of particular key colors by dragging the interior nodes along the path.

To try the alternative approach, right-click your Linear fill sample object and choose **Edit Object Fill...**.



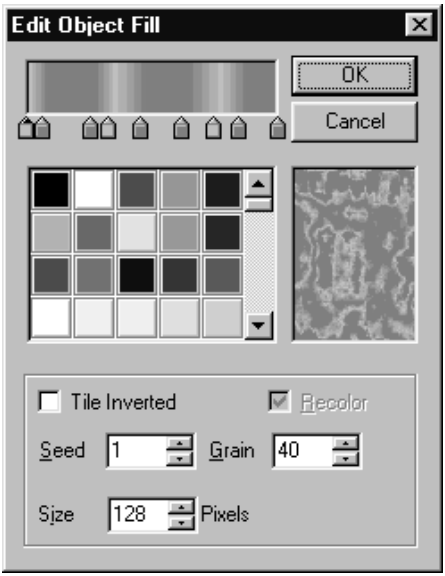

The dialog displays the gradient spectrum, with pointers marking the key colors where color spread(s) begin and end. We've shown the gradient with just one spread; your sample may have more. The dialog also includes the solid color gallery.

To add a key color node for more complex banding, click either on the spectrum or just below it, where you want to place the new key color. Here we've clicked in the middle of the spectrum. A new pointer appears, using black as the default key. Note that the new pointer's arrow is also black, indicating that it's selected; unselected pointers have white arrows. You can drag a pointer to reposition the key color.

To change a key color, click to select its pointer, then click the gallery thumbnail for the color you want. Even in this grayscale example, you can see we've changed the new key color. Note that the pointer shows the new key color, and is still selected.

If you change your mind and want to delete a key color, just right-click its pointer. There's no undo for this action, so if you change your mind again, you'll have to click **Cancel** and start over!

You can add key colors for exotic “rainbow” effects, but more often it’s useful just to have an extra control point, intermediate between the two end colors of the gradient, that lets you fine-tune how the color spread is distributed across the object.



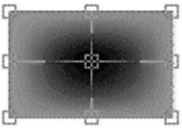

Certain settings for Plasma fills, are only available via the Edit Object Fill dialog. **Seed** is a random number where each value entered produces a different pattern. **Grain** controls the flow of the pattern, with lower values yielding a smoothly flowing (“cloudy”) pattern, and higher values displaying more image grain. Use a larger value for **Size** for better appearance if the fill is being applied to a larger object. If the fill pattern is being tiled (repeated) within the object, check **Tile Inverted** if you want the patterns to flip alternately so tops will touch tops where two fills meet, lefts will touch lefts, and so on.

You can also use the Edit Object Fill dialog to apply a color to an object’s Bitmap fill. Click a thumbnail in the dialog’s gallery. When you apply the color, DrawPlus remembers the original colors and checks the **Recolor** box. To restore the original color scheme, uncheck **Recolor**. As for Plasma fills, check **Tile Inverted** to flip tiled bitmaps alternately; leave this unchecked to tile bitmaps normally, without flipping.

## Working with Mesh fills

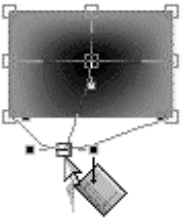
A **Mesh fill** works like a gradient fill but uses a more complex fill path, with a grid or "mesh" of many nodes representing separate key colors. The overall effect, especially useful for multifaceted highlighting, arises from the color gradients that spread between each of these nodes. Once you've applied a Mesh fill to an object using the Fill tab, you can edit the mesh itself with a special toolbar to achieve unique results.

Let's look more closely at the shape you filled earlier with a Mesh fill. Select the shape, then choose the Fill tool. As you'd expect, the fill's nodes (each representing a key color) are interconnected by a grid of path lines.



If the Mesh fill in front of you looks too complex, you may wish to apply a simpler one from the Fill tab. Zoom in so that you can clearly see the individual nodes. In a Mesh fill, there's a unique gradient along each path connecting two nodes. Potentially, each node could have a different key color, resulting in an extraordinarily diverse yet controllable fill pattern.

Click an edge node with the Fill tool to select it. (The Mesh Fill toolbar appears—we'll get to that in a moment.) Drag the node slightly. You'll see that, as with other gradient fills, moving a node shifts the placement of its key color on the object.



With multiple gradients leading from each node, even a slight movement can have wide-ranging effects. To make life even more interesting, you can select multiple nodes by **Shift**-clicking them in turn, or dragging a marquee around them.

Looking closely, you can see that **attractor handles** have appeared on the selected node(s) and adjacent nodes. The number of handles per node will vary, depending on the number of adjacent nodes.

To understand these handles, think (or refer) back to Chapter 5's discussion of curve-editing. Mesh fill path lines behave very much like intersecting curves, and their nodes behave like corners. To change the color spread between any two adjacent nodes, you reshape the path segment that connects them by dragging the nodes' attractor handles. Using the three Node Type buttons on the Mesh Fill toolbar, you can set any node to be **sharp**, **smooth**, or **symmetric**—which determines how the curved path segments adjoining the node will respond.

You can have a great deal of fun simply applying Mesh fills from the Studio, but reviewing basic curve-editing is essential if you intend to tap their full potential. The few additional bits of knowledge you'll need—how to add and delete nodes, and apply the other toolbar buttons—are given in online help (search "Mesh fills" in the Index).

## Adding fills to a gallery

As soon as you make any adjustments to the tint, path, or color(s) of a fill that's been applied to an object, you've created a unique fill that exists only on that object. That is, the fill is not one of the preset "gallery fills." If you want to reuse the same fill on other objects or in later sessions, you can add it to the appropriate fill gallery, where it will be saved and available the next time you open a new document.

 To add a fill to the gallery, select the filled object and click the Fill tab. The gallery for the object's fill type is automatically displayed. Simply click the **Add Fill to Gallery** button. In the dialog, you can provide a special name for the new fill if you like, click **OK**, and a new thumbnail appears at the bottom of the gallery.

As we'll see very shortly, you can modify the definitions of fills that are already in the gallery, too. But adding your own new fills is the easiest way to keep track of those you definitely plan to reuse in later sessions. If you just want to reuse a particular object's fill on a new object, you don't have to add the fill to the gallery. All you need to do is change the default fill settings, as we'll see next.

## Setting the default fill

As you've noticed, when you draw a closed shape, whether by closing a line or dragging out a QuickShape, it immediately fills with the default fill, which at first is solid black. If you're creating new objects, and you know the fill will be something other than black, you can change the default settings. There are two ways to do this.


Right-click one of your sample fill objects, let's say the one with the Radial fill, and choose **Update Defaults** from the menu. Now choose any QuickShape tool and drag out a new object. As you see, it's been created with the same Radial fill used on the sample object. The line setting matches as well (but we'll get to that a bit later in the chapter).

The second way of changing the defaults is to use the Studio. Simply deselect all objects by clicking on an empty region, then choose your preferred settings on the Color tab (for a solid fill) or Fill tab (for other fills). The next new shape you draw will use these settings.

You can use the same techniques to change the default settings for new text objects, which are distinct from those for shape objects. In other words, use Update Defaults on a text object, or (using the Studio) deselect all objects and change settings on the Text tab instead.

Whichever method you use, it's often easier to set up the defaults before you create new objects, rather than change the properties later.

## Changing gallery colors and fills

As we've seen, when you're applying a solid fill or adjusting the key colors of a gradient fill, you choose a color from the built-in set of DrawPlus colors, displayed as a gallery of thumbnails. And when you pick a non-solid fill of any type, you choose from a gallery of fills displayed on the Fill tab.

You can change the definition of any preset color or fill that appears in one of these galleries. The process is comparable to adjusting an object's "local" fill, but you begin by right-clicking the gallery thumbnail you want to change.

Without actually making permanent changes, let's preview the dialogs you would use. Start by displaying the solid colors on the Color tab. Notice that as you move the mouse over the gallery thumbnails, each color's name appears. Right-click any thumbnail and choose **Edit Gallery Color**.


A dialog appears that looks exactly like the one we used earlier to edit the solid fill on our sample object. It works the same way, too, except that if you altered a solid gallery color you'd be making a permanent change to that particular color entry. Also, any solid colored objects which used that particular color entry would also change to use the new color. Generally it is better to add a new color if a suitable one is not already available in the color gallery.

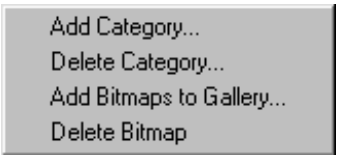
Now switch to the Fill tab and display the Linear fill gallery. Right-click any thumbnail and choose **Edit Gallery Fill**. This displays another familiar dialog—it's just like the one we used to edit our sample gradient fill object. And the dialog is the same for all the other fill types (except Mesh and Bitmap). The same caveats apply: be sure you really want to alter rather than add a gallery fill before doing so.

In passing, notice that right-clicking on a thumbnail also provides the option of deleting its color or fill from any gallery. Keep in mind that there's no Undo for this action, so you may want to reserve it for managing your own custom fills (or if there's a preset you really don't care for!).

As you know, Bitmap fills work a "bit" differently from the other fill types... So it's not surprising that the Bitmap fill gallery affords some unique choices.

## Using the Bitmap fill gallery

You can add your own bitmaps to use as fills, and manage the set of categories used to display the gallery fills. Display the Bitmap fill gallery and right-click a thumbnail. You'll see that the menu options are a bit more extensive here. Two of them let you manage the set of categories the gallery uses to display its bitmaps. You can delete an entire category or (more likely) add a new one—the most obvious starting point would be a "My Fills" category for new fills you create.




There are two basic ways to add Bitmap fills to the gallery: by importing one from a file or by creating one in DrawPlus. Whichever approach you use, first decide which category you want to drop the bitmap into, then display that category's gallery on the Fill tab.

The first approach would be to right-click on any thumbnail already in the gallery and choose **Add Bitmaps to Gallery...** . A standard file selection dialog appears that lets you pick the source file to import.

 The second approach is to use a bitmap-filled object in DrawPlus as the source for the fill. In Chapter 6, we saw how to import a picture from a bitmap file, yielding a bitmap-filled QuickBox shape. To add this object's fill to a gallery, simply select it and click the **Add Fill to Gallery** button (which is grayed out unless an appropriate object is selected). You'll be prompted to provide a file name (the fill is stored as a JPG), and the new fill will appear in the current gallery.

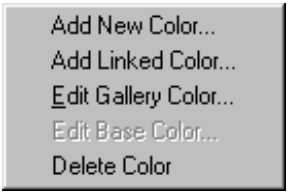
You can also create your own bitmaps directly in DrawPlus by designing a pattern with standard lines, shapes, and so on, then selecting the assemblage and choosing **Tools/Convert to Bitmap...** . Use the default Export settings to keep the object the same size, and the result will be (you guessed it) a bitmap-filled box, ready to add to the Bitmap fill gallery and use as a fill on other objects.

## New gallery colors and linked colors

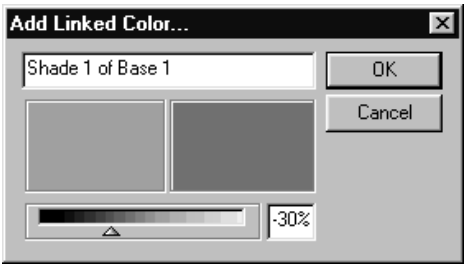
The set of colors in the Color tab's gallery is special because it's used to define not only solid fills but key colors in gradient fills, and line colors as well. You can add new colors to this gallery just as you'd add a fill to one of the other fill galleries—by selecting an object with the custom color and clicking the **Add Fill to Gallery** button. Alternatively, you can right-click any solid color thumbnail and choose **Add New Color...**. We'll try the second approach in a moment.

A **linked color** is a special color you define as a shade of any existing solid color (the "base color"), then save separately in the Color tab's gallery. You can use linked colors just like regular solid colors to fill objects throughout your document. This links the object fills back to the base color itself—so if you want to update all the linked fills, you simply modify the base color. When you're creating a complex drawing with numerous shades, for example an illustration of a car with subtle surface curvature and modeling, linked colors can be a real time-saver if you need to change the overall color from red to blue.

Typically, you'll create a set of linked colors for a particular illustration, consisting of a new base color (with a unique name of your choosing) plus various linked shades of that color. To see how this works, let's try creating a small set of linked colors.




First we'll establish a custom color to use as the base. Right-click any thumbnail in the Color tab's gallery and choose **Add New Color...** . Working in grayscale values is often a useful starting point for an illustration, so in the dialog, enter RGB values of 160,160, and 160, which will produce a medium gray. As a name, type "Base 1." Click **OK**, and you'll see the new thumbnail at the bottom of the gallery. Now right-click the new base color's thumbnail and choose **Add Linked Color...** .




Drag the slider to the left until the Value readout is about -30%, and click **OK**. (We have the option of typing a new name, but let's keep the default name supplied.) A new gallery thumbnail appears, with a special "link" icon to signify a linked color. Right-click on the base color again, and repeat the steps to define another linked color, this time with a value of +60%. Now we've got a base color and two linked colors.

 To alter the color scheme, we simply change the base color. Right-clicking on the base color's thumbnail provides the **Edit Gallery Color...** item, but suppose the base color is buried somewhere in the gallery and we've forgotten where. Right-click either of the shade colors' thumbnails and choose **Edit Base Color...** . In the color selection dialog, click and drag around the color space window while observing the set of gallery thumbnails.

 You'll see all the linked color thumbnails update simultaneously! That's the principle in a nutshell, and if we had used these colors in a drawing, for example to define a gradient fill, the effect would be the same: to alter every instance of linked colors in a single operation.

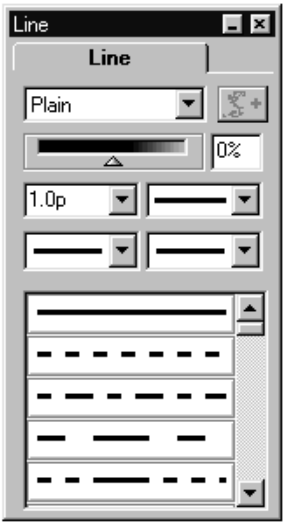
By the way, to see a great example of linked colors, run the Startup Wizard and choose **View Samples**. Select the file titled “Drinks On Us” and try adjusting the linked colors at the bottom of the gallery to see the effects as you “mix” your own drink.

# Line settings

After all the intricacies of the various fill types and settings, the concept of line settings will seem quite uncomplicated!

## The Line tab and line properties

Click the Studio’s **Line** tab to display it. Detached from the Studio, it looks like this:




At the upper left of the tab, there’s a Line Type list that lets you select which gallery of preset lines is displayed further down. In this chapter, we’re just focusing on the “Plain” line type that includes standard solid or dashed lines, as shown here. (The other categories are so-called “chain” lines and these will be covered in Chapter 9.) Other controls applicable to plain lines include the Tint slider, Value box, Line Weight (width), Line Style, and Start and End Style lists. In addition, there’s a gallery of preset lines with a variety of styles to choose from.

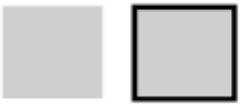
All DrawPlus objects, including plain lines, closed shapes, text objects, and QuickShapes, have the **line properties** shown on the Line tab: color, weight, style, and termination (start and end). The permanent default line setting for most QuickShapes and shapes is “None,” but you can still use the Line tab to alter the line properties of any object after it’s been drawn.

## Applying line properties

To experiment with line settings, zoom in on one of the sample objects you created to demonstrate fills. (Click the **Zoom Tool** button, then draw a marquee around the object.) Most likely, the object still has an line setting of "None." To produce a visible line, first select the object with one of the selection tools. Then click the Line tab to display it (if it's not already in front). The drop-down lists will show the object's current settings. In the Line Weight drop-down list, choose "2.0p." The "p," you'll recall, stands for "points," a common unit in the printing and publishing industries; there are 72 points to an inch.

Here's a quick way to adjust the weight (or any of the line properties, for that matter): click the drop-down list so it's expanded, then press the up or down arrow on the keyboard to step through the available settings. And by the way, for a custom line width you can type in-between settings (12 or 3.2, for example) into the box and then press **Enter**.

To set the line color, switch to the Color tab and **Shift**-click a bright color thumbnail such as red for a more conspicuous line. Alternatively, you can right-click any color thumbnail and choose **Set Line Color**.

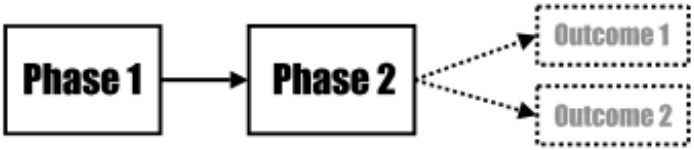


Try zooming out to get a sense of how thick the line appears at various scales. If you zoom out far enough, the line may "disappear" entirely. Notice, however, that if you select the object and resize it larger (drag out a corner node), the line's weight remains the same.

Back on the Fill tab, let's change the line style. We could use the drop-down list, but it's even easier to click one of the thumbnails in the style gallery. Try a few of them—notice that only the line's style varies, not its weight.

As with fills, you can drag a preset line from the gallery and drop it onto any object; just make sure no objects are selected when you first click on the preset. To "turn off" an object's line, select "None" as its line weight setting. This cancels other line properties, too, so if you decide to reapply a line by clicking a numeric weight setting, the line will have the default line settings (see below).

You can apply Line tab settings to **connectors** (see Chapter 6) just as to plain lines. For example, when designing a flow chart or process diagram, you can add arrowheads to show directionality, or a dashed line style to distinguish possible paths from definite paths.




## Adjusting an object's line tint and color

As with fill properties, once you've applied a line to an object, you can adjust its tint (lightness) and color on the object. Select the sample object and drag the Tint slider on the Line tab to the left or right. You'll see the line color darken or lighten accordingly. As for fills, you can type a specific number into the Value box ("0" to reset the tint), then press **Enter** to update the line.

Plain lines use a single, solid color (RGB value). If the value you want isn't displayed in the Color tab's gallery, you can adjust the line color to a custom setting. Right-click the object and choose **Edit Line Color...** , then use the dialog to set a specific RGB value, as you did earlier for Fill colors.

One way to make an outline invisible is to set it to the same color as the object's fill.

## Setting the default line

Initially, the default line for objects created with the line tools or the Text tool is is a black, 1.0p line. As with fills, the default line properties for lines/shapes, connector, dimension objects and text objects are defined separately—and you can use the same two basic techniques to change the default line settings.

One option is to define a sample object (either a line/shape, connector, dimension or a text object, the object type matching the set of defaults you're updating), then right-click the object and choose **Update Defaults**.

If you just want to define new default line properties without affecting the fill settings, use the approach of deselecting all objects on the page and then choosing new properties on the Line tab. The first approach must be used to change the defaults of connector and dimension objects.

## Using Format Painter

 You can use the Format Painter to copy one object's line and fill properties directly to another object. All you have to do is select the object that has the properties you want to copy and click the **Paste Format** button on the Standard toolbar. When you click the button, the selected object's formatting is "picked up." The cursor changes to a paintbrush and the next object you click takes on the original object's properties. To select another object without pasting the formatting, click it with the the **Shift** key down. To cancel Format Painter mode, press the **Esc** key, click on a blank area, or choose any tool button.

The Format Painter can transfer line and fill properties between line/shape and text objects. Note that when you copy formatting from one text object to another, a number of other text properties (font, style, and so on) besides line and fill are passed along at the same time.

# Transparency effects

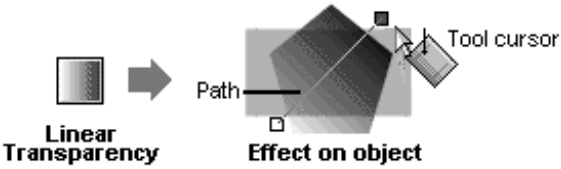
Transparency effects are great for highlights, shading and shadows, and simulating "rendered" realism. They can make the critical difference between flat-looking illustrations and images with depth and snap.

Understanding transparency may seem a bit tricky because by definition, you can't "see" it the way you can see a color fill applied to an object. But it's not so difficult if you've grasped the basics of fills as described earlier in the chapter.

## Transparency: The "vanishing" fill

Think of a grayscale fill—that is, a simple gradation from dark to light, with no color—that determines which shades of gray you see across various portions of an object. In the same general way, transparency determines which portions of the object you see *through*—that is, the portions that *vanish*. The more transparency in a particular spot, the more vanishing takes place there, and the more the object(s) underneath show through. Just as a grayscale fill can vary from light to dark, a transparency can vary from less to more, i.e. from clear to opaque.

In this illustration, the pentagonal shape has had a Linear transparency applied, with more transparency at the lower end of the path and less at the upper end.




In DrawPlus, transparency effects work very much like grayscale fills. Just like fills...

- Transparency effects are applied from the Studio—in this case, using the **Transparency tab**.
- You apply transparency effects by clicking gallery thumbnails or dragging them onto objects.
- The available transparency types are named **Solid**, **Linear**, **Radial**, **Ellipse**, **Conical**, **Bitmap**, **Plasma**, **Square**, **Three Point**, and **Four Point**.
- Most transparency effects have a path you can edit—in this case, with the **Transparency tool**.

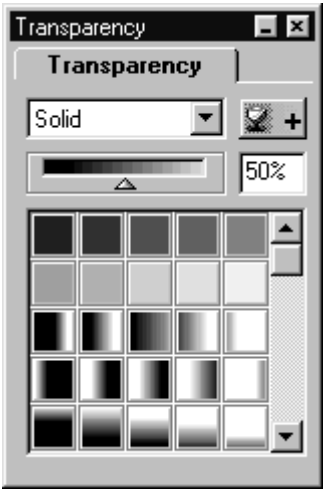
And as for the effects available on the Transparency tab, all are comparable to the fills of the same name:

- **Solid** transparency distributes the transparency evenly across the object. The solid transparency thumbnails take up the top two rows of the Transparency tab's gallery. (Don't confuse them with similar-looking thumbnails on the Color tab.)
- **Linear**, **Radial**, **Ellipse**, **Conical, Square**, **Three Point**, and **Four Point** transparencies provide a simple gradient effect, with a range from clear to opaque. The **Plasma** type produces a mottled, "cloud" effect.
- The **Bitmap** gallery includes texture maps based on the Fill tab's selection of bitmaps. (If you add your own Bitmap fill, it automatically acquires a transparency equivalent.)

If these comparisons have only confused you, by all means go back and review the discussion of fills earlier in the chapter!

## The Transparency tab

Let's check out the **Transparency tab**. Separated from the Studio, it looks like this:




As with the Fill tab, there's a **gallery** with various preset transparencies—not as much variety as for the fills, but that's because transparency effects don't involve color. One gallery is shared by all the effects (except Bitmap, which has its own). The slider above the gallery lets you vary the **level** of a Solid transparency, roughly the equivalent of a fill's lightness. Finally, there's an **Add Transparency to Gallery** button.

## Applying a transparency effect

In fact, every new DrawPlus object already has transparency—that is, a transparency setting of "None", which means it's created as an opaque object. Without further ado, let's make an object disappear! To do so, we need to apply a 100% Solid transparency. Draw a QuickBox (or some other shape) as a test object, and click the Transparency tab to bring it to the front. Now select "Solid" from the drop-down list and drag the slider from 0% all the way up to 100%. Going... going... gone!

The illustration shows how this looks when the selected object overlaps another. Try it yourself. As you can see, the mechanics of applying transparency are quite simple. As with fills and lines, you can drag and drop preset transparency effects from the gallery onto an object; just make sure no objects are selected when you click the thumbnail.

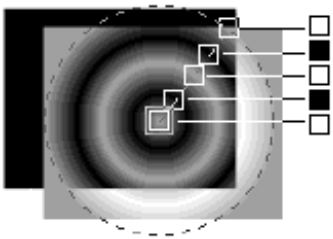
## Adjusting an object's transparency


You'll recall that different fill types have different paths. The same concept applies to transparency effects, which have their own editing tool, aptly named the Transparency tool, on the Drawing toolbar. Click its button now to activate the tool.

Let's continue our tour of transparency effects and inspect their paths. With your sample object selected, try applying each of these effects in turn: Linear, Radial, Ellipse, and Conical. The paths for each resemble those of their fill counterparts. Practice using the Transparency tool to drag the nodes or click to reposition the transparency's starting point, and see the effect on the object change accordingly. The effect starts where you place the start node, and ends where you place the end node.

You can also adjust the **level** of transparency locally on an object. For Solid transparencies, simply use the **Level** adjustment slider and Value box on the Fill tab.

For transparencies with multiple nodes, each node has its own level, comparable to a key color in a grayscale fill (see the previous discussion of adjusting object fill colors). The darker the grayscale value assigned to a transparency node, the more transparent the effect at that point. Here's a gray box over a black box, with multi-level Radial transparency applied to the gray box. The five nodes have been set to alternating values of 100% white and 100% black, represented by the thumbnails at the right.



To change a value, you have several options:

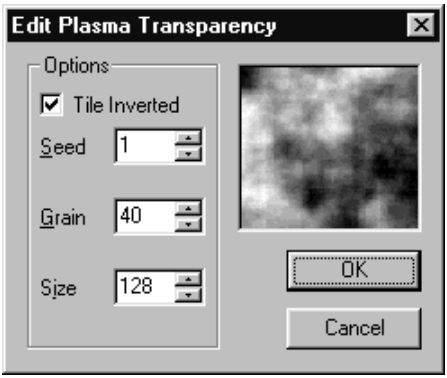
- Select the node and drag the **Level** slider on the Transparency tab: left toward opaque, right toward clear
- Type a value directly in the **Value** box, or
- Click a color thumbnail in the Color tab's gallery, or drag from a thumbnail onto the node. Only the grayscale value matters, so it's simpler to use the grayscale thumbnails. Just make sure you're using the Color tab—if you click a thumbnail on the Transparency tab, you'll reset the entire transparency!

Finally, as with fills, you can add or delete nodes (other than the start and end nodes) to change the complexity of the transparency. To add a node, drag from a Color tab thumbnail onto a portion of the transparency path where there is no node. To delete a node, select it with the Transparency tool and press **Delete**.

## Plasma and Bitmap transparencies

The **Plasma** transparency type produces a cloudy effect, while the **Bitmap** gallery includes **texture maps** based on the Fill tab's selection of bitmaps. For both transparencies, the path determines the center and two edges of the effect.

For Plasma transparencies only, you can edit the effect on an object by right-clicking the object and choosing **Edit Plasma Transparency...** .




As for Plasma fills, different **Seed** values produce different random patterns; **Grain** affects the pattern's flow, and larger **Size** values are better suited to larger objects. **Tile Inverted** flips the patterns alternately where they tile together. Experiment for the best local effect.

## Changing gallery transparencies


If you've defined a new transparency on an object by setting path and/or level, you can add it to the set of shared gallery transparencies shown on the Transparency tab so that it will be available to use again. You can also delete any of the gallery transparencies. To add a new gallery transparency, select the object with the transparency you wish to add. Then click the **Add Transparency to Gallery** button. You'll see a new thumbnail appear at the bottom of the gallery.

To delete a gallery transparency, right-click its solid color thumbnail in any of the galleries and choose **Delete Transparency**. Be sure you're right, then go ahead: there's no undo for this action.

# Creative Tips...

## Fill Effects

- Try Bitmap fills applied directly to text to reinforce impact.


- Use the Radial and Ellipse fills to build depth and highlights to create image form.
- Use Ellipse fills with a long, thin setting within text to produce metallic highlight effects.
- Create carved-text relief effects like those in the Studio Wizard's Carved Text category. For example, start with a box with a wood grain Bitmap fill, and a text object.


Copy the box twice and fill the first copy with a solid fill color. Then place a copy of the text object over each of the copied boxes, and use the Combine tool to create a "hole" in each box.

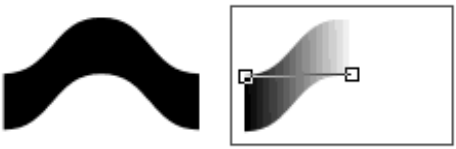

Drag the Tint slider left to darken the fill on the original object. Finally, arrange all three objects with the darker original on the bottom, the solid-filled hole in the middle, and the lighter wood grain hole on top, offset so that the middle color layer creates a shadow effect.

- Try using Photo Wizard, the built-in DrawPlus photo editor, to adjust an object's Bitmap fill. Just double-click the object to run Photo Wizard!
- For an outline fill effect with text: Type some text and choose a line thickness (say, 5), then apply the same color (say, black) to both line and fill. Copy this and reduce the line (to say, 2.5) and apply a different color (say, white) to both line and fill. Copy this object, apply a Radial fill, and set line weight to None. Finally, select all three text objects and align their centers.


## Transparency effects

- Use gradient transparency effects on imported clipart photos for blended montage effects—one photo seamlessly blending into another, vignetting the edges of bitmaps, and so on.
- Create your own color "filters": color-filled QuickShapes with applied transparency. Use the filters over imported photos to apply tint/shadow effects to local regions.
- Use transparencies to create 3D effects on your drawing or illustration. For example, start with a QuickWave from the QuickShapes flyout and fill it with a color:

Duplicate the shape and fill it with black. Then apply a Linear transparency to create a shadow mask:



Finally, select both the original and the mask object and align their centers:

- Use multiple layers of transparent text against a dark background to give neon and glowing effects.
- Use the transparency overlay technique to make text more legible when overlaid on top of bitmap-filled objects.
- Use Bitmap transparencies (from the Bitmap category on the Transparency tab) over a solid-filled background object for a unique duotone effect.

# 8

# Using Layout Tools

# Introduction

As long as what you are drawing is composed of only a few graphics objects you can be a free spirit. You can draw any way you like to your heart's content. It is one of the joys of using DrawPlus that everything is almost instantly changeable.

If you are trying to create a more complex drawing, or an accurate drawing, or a scale drawing, or just a drawing task that you have to repeat on a regular basis—then you need some organization. You need techniques that allow you to position and draw accurately without effort, and tricks that enable you to organize a drawing so that you can work on one part of it without fear of changing another. And you need to set defaults that save you from having to edit every new object.

# Toolbars and Tabs

Toolbars and Studio tabs are initially arranged in a convenient layout around the perimeter of the work area. However, you have full control over this arrangement, and can customize the display any way you want—by showing or hiding toolbars and tabs, or repositioning them onscreen in a way that suits your style.

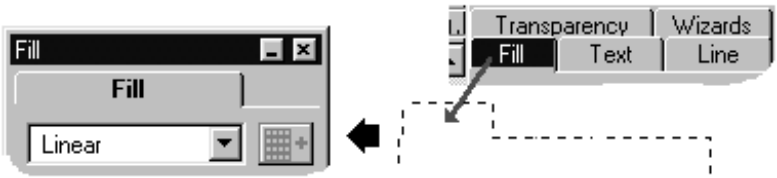
To set which toolbars and Studio tabs are on view, simply right-click on any toolbar or on the "label" part of any tab, and check or uncheck toolbar and tab names as desired. You can also use the **View/Toolbars and Tabs...** command, which is convenient if you need to change more than one item at a time.

You can reposition any toolbar by clicking and dragging a neutral (non-button) part of the toolbar. When detached from their original positions, the toolbars turn into separate floating windows. If you drag a toolbar window to the top, left, or bottom of the screen, it will attach into a new, fixed position.

Studio tabs can be customized, too. Using the right-click popup menu, you can hide and show tabs selectively. To hide and show the Studio tabs as a group, click the Studio button on the HintLine toolbar.

As long as the tabs are in the Studio, you can only view one one tab's contents at a time. If you like, you can detach individual tabs from the Studio by dragging them off as floating tab windows that can include one, two, or more tabs. You can then drag the tab windows around, roll them up to conserve space, and even dock (join) and undock tabs to cluster them within frames as you see fit. If you like, you can dispense with the Studio entirely and just use a couple of floating windows containing the tabs you use most often.

To detach a Studio tab as a separate window, click on the tab's label and drag it to the new position. The illustration shows the Fill tab being detached from the Studio to a separate window.




To reposition a tab window frame on the screen, drag the window frame by its title bar. To "roll up" a floating tab window, click the window frame's Minimize button. (Click again to restore the window.) To close a floating tab window, click the window frame's Close button.

The tabs' **docking** feature lets you group tabs as you prefer. Perhaps you like working with several separate tabs so that it's easier to click between them. Or perhaps you need to cluster tabs in a single window frame to conserve screen space.

Docking (joining) tabs is the reverse of undocking (detaching) them. To dock a tab with another window or with the Studio, click on the tab's label and drag it into the other window's frame (or back into the Studio). Drop the tab when the target window responds.

# Positioning Aids

DrawPlus provides you with many aids for positioning objects accurately and in relation to one another. Many of them you have been using, perhaps without giving them a thought, from the first time you used DrawPlus.

The main positioning aids are

- Rulers
- Guide lines

- Snapping grid

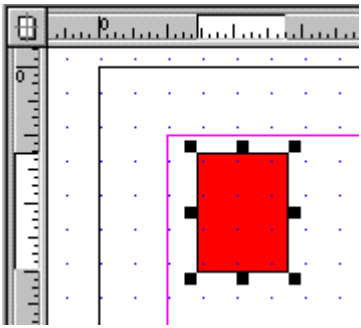
## Rulers

The **rulers** that surround the page allow you to measure the exact position of an object. Perhaps because they are so obvious and simple, the rulers tend to be ignored—but if you know how to use them they are a powerful tool.

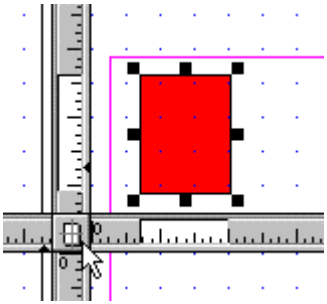
You can change the units shown on the rulers if necessary (see the section “Measurement Units and Scale” later in this chapter). The default units are inches in Drawing Mode and pixels in Animation Mode. For the time being, we’ll assume the rulers are marked in inches.

The size of the scale divisions that you actually see depends on the zoom factor you are using. DrawPlus selects sensible units for you and this means that if you need to do accurate work you should zoom in.

When you select an object the rulers not only show its position, but also its extent by a lighter colored area or indent.



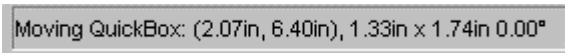
You can even move the rulers by dragging the position where they cross.



If you hold down the **Shift** key while you drag, then the origin (zero position) of the rulers is left fixed. Otherwise the origin is moved to the point where the rulers cross.

Double-clicking on the cross button automatically makes the rulers jump to the currently selected object. Double-clicking with nothing selected, or double-clicking a second time, resets the rulers so that the origin is at the top left hand corner of the page.

If you place your cursor over the currently selected object or drag it to a new location you will also see position information in the HintLine.



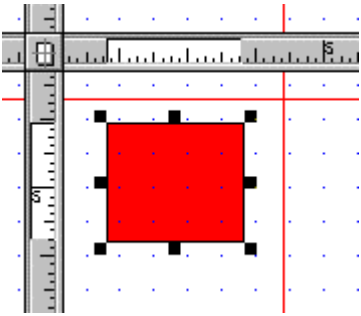

The figures in brackets give the location of the top left hand corner, the next two figures are its width and height, and the last figure is its angle of rotation.

## Guide lines

Although rulers are useful for gauging the size and position of objects on the page, they do require you to put some work into positioning objects manually. If you want to position objects repeatedly on the same horizontal or vertical boundary then **guide lines** are much easier.

To create a guide line, click on the horizontal or vertical ruler at the position you want it to appear. (Guide lines do not appear on your printout.)

You can reposition a guide line by dragging it wherever you want with the Pointer tool. Dragging a guide line off the screen deletes it.



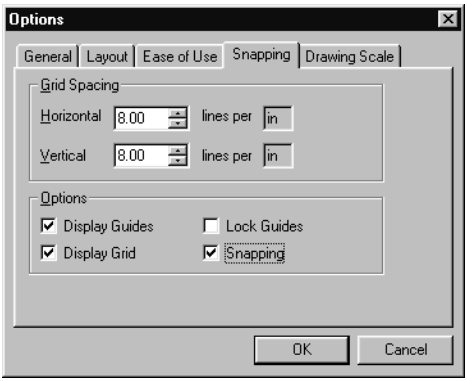
One advantage of using guide lines is that they are “sticky.” As long as you have **snapping** turned on (see below), an object will behave as if it is attracted to a guide line as you move close makeing placing the object on the guide line very easy. Guide lines also attract the object when you are changing its size.

The magenta lines that you see around the edges of every page are a special set of guide lines, the **margins**. You can set the margin size using the command **File/Page Setup...**.

## The snapping grid

The **snapping grid** is another aid to positioning related to the ruler settings. It is a grid of dots (as shown in the illustrations above) that attract objects in much the same way as guide lines.

The spacing of the grid can be set to any number of divisions of the ruler unit using the **Tools/Options...** dialog. This time, click on the **Snapping** tab and enter the number of snap lines per measurement unit you want. You can set independent horizontal and vertical divisions. Notice that you cannot change the unit of measurement in this dialog box because this is determined by the rulers.




To show the snapping grid, choose **View/Layout Tools** and check the **Snapping Grid** item on the submenu, or double-click the **Snapping** button on the HintLine toolbar (see below). The grid appears as a matrix of blue dots. How many dots you actually see depends on the degree of zoom you have selected but the snapping grid still works at the number of divisions you have selected. For example, if you are working in inches and select 10 lines per inch then the snapping grid will allow you to position an object at 1/10$^{th}$ inch increments irrespective of the zoom.

The positioning of new guide lines you create is also controlled by the snapping grid.

## Snapping

 You can turn the effect of the snapping grid and guide lines on and off in one operation, by clicking the **Snapping** button in the HintLine toolbar.

When snapping is on, objects you create, move, or resize will snap to the grid or to visible margin and ruler guides. In this mode, you can think of the snapping grid as setting the smallest increment of movement or scaling you can use. With snapping on, you cannot position or size an object between the snapping grid points. For example, if you set the snapping grid to 1 line per inch and then move an object you will discover that it appears to jump one whole inch at a time.

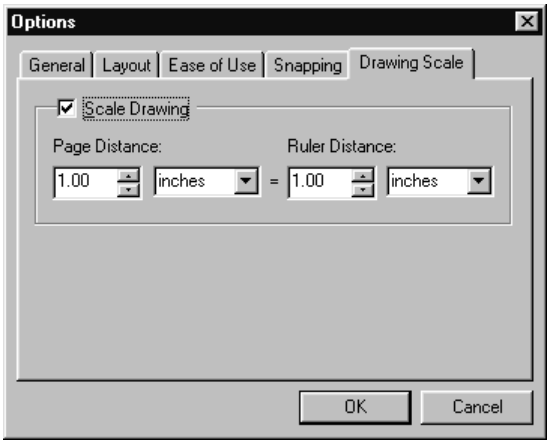
If you find that snapping is a nuisance because it is stopping you from placing objects exactly where you want them, don't just give in and turn snapping off! Snapping is your best aid in getting objects to fit together when you are assembling a drawing. For example, if you align two objects by eye and then zoom in, you will quickly see that they are not accurately aligned at all!

So if you do find snapping a nuisance, it may be that you have the grid set too coarsely to allow you the freedom you need in your design. Use the **Tools/Options...** menu command to set a finer snapping grid.

# Measurement Units and Scale

The ruler units used by DrawPlus determine the units displayed on the rulers and the units used when positioning and scaling objects. If you need to change the ruler units, use the **Tools/Options...** menu command, click on the **Layout** tab and select the desired ruler units from the list of options. This tab also lets you lock the rulers into position and remove them from the display altogether.

If you wish to create a scale drawing use the **Tools/Options...** menu command and click on the **Drawing Scale** tab.



The **Scale Drawing** box must be checked in order for the scale drawing options to be available. To create a scale drawing, check the box and adjust the ratio between the Page Distance and Ruler Distance by selecting appropriate values and units for each.

The Page Distance and Ruler Distance areas of the dialog express the current drawing scale as a proportion between the **page units** that define the document's actual printing dimensions and the onscreen **ruler units**. For new documents, the proportion is always 1:1. When you change the ruler units on the Drawing scale tab, the units shown on thew Layout tab is simultaneously updated and vice-versa.

For example, for a house plan you might choose to set a page distance of one inch equivalent to a ruler distance of ten feet. You can adjust either side of the proportion, so for example a scale of 1:4 could be set by using three inches = one foot. Once you've made the change, ruler markings, dimension lines, and other onscreen units will appear in the selected ruler units and scaled accordingly onto the printed page.

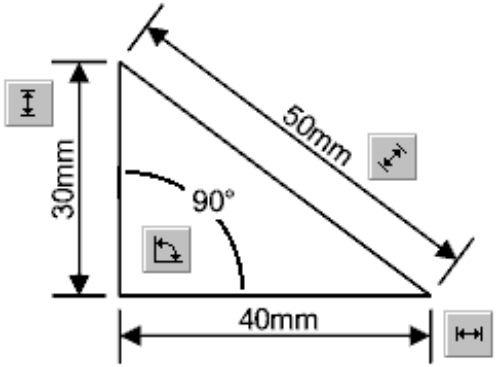
Notice that selecting "inches" for the ruler units gives a scale divided into quarters, eighths and so on by contrast with the "inches 10ths" scale, which is marked up in tenths.

Note that the **File/Page Setup...** dialog will also report dimensions in the ruler units. To avoid confusion, always set your page dimensions first and then, if necessary, set your scaling factor and ruler units second. You can check the document's actual printed page dimensions by choosing **Print...** from the File menu and clicking the **Options** button.

# Dimension Lines

DrawPlus lets you add **dimension lines** with text labels showing the distance between two fixed points in a drawing, or the angle formed by three points. For example, you can draw a dimension line along one side of a box, measuring the distance between the two corner points. If you resize the box, the line automatically follows suit, and its label text updates to reflect the new measurement.

You'll find dimension lines indispensable for creating technical diagrams, floor plans, or any drawing where exact measurements and scale are important. (The Library tab's "Layout Symbols" galleries includes a wide variety of designs you can use to assemble your own diagrams.)

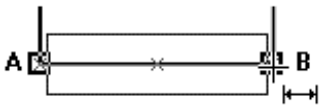



The **Dimension Tools flyout** on the Drawing toolbar includes four tools, their buttons shown in the above illustration along with the kind of dimension line each one draws: **Vertical**, **Horizontal**, **Slanted**, or **Angular**. (Slanted dimension lines can be drawn at any angle.)

Although they can be drawn anywhere on the page, dimension lines are usually attached to **connection points** on objects. By default an object has eight dimension connection points around its perimeter. These connection points have the same behavior as discussed in Chapter 6's coverage of connectors and you can use the Connection Point tool to create new connection points.

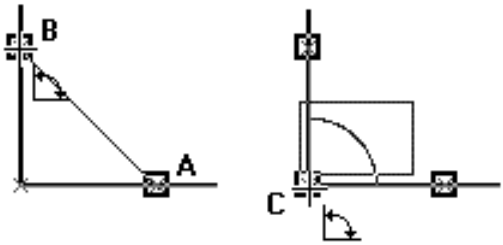
When you choose one of the Dimension tools, connection points on page objects become visible. When you move the mouse pointer directly over a connection point, a small box appears around it when a connection can be made.

For a **linear dimension** (vertical, horizontal, or slanted), click where you want to start the dimension line—for example, on a connection point—then drag and release the mouse button where you want to end the line. The illustration below shows the result of dragging between connection points A and B. A pair of parallel extension lines appears from the two points. Between the two extension lines, the dimension line and its label "float," awaiting final positioning.



To complete the dimension line, move the mouse again to position the floating line and its label—note that they respond independently—and click when they are where you want them. (You can always change the positions later.) The dimension line appears.

For an **angular dimension**, click a point along one side of the desired angle, then drag and release the mouse button at a point along the other side of the angle (points A and B in the illustration below). Click again at the vertex of the angle (point C below). These three points define the starting and ending sides of the angle. Between the two sides, the angle's arc and its label "float," awaiting final positioning. Click again to position the floating elements.
**Note:** Angles are measured counter-clockwise from the starting to the ending side, so choose your three nodes accordingly.




## Adjusting dimension lines

Like everything else in DrawPlus, dimension lines are editable.

- To reposition the line and/or its label, choose the Node tool and click on the dimension line to select it. Drag the control handles to move the line or label.
- To set the position of the label relative to a linear dimension line, select the line and click one of the label alignment buttons on the Studio's Line tab.
- By default, linear dimension labels use the current ruler unit of measurement (see the preceding section)—but you can choose a different unit for a selected dimension line from the **Unit of Measurement** list on the Line tab. The **Precision** list lets you select the number of places displayed after the decimal point.
- To apply different formatting to the line, use the Line tab's style controls to adjust the line's weight, style, and start/end terminators. The settings are applied to both the dimension line and extension lines.
- To apply different formatting to the label text, use settings on the

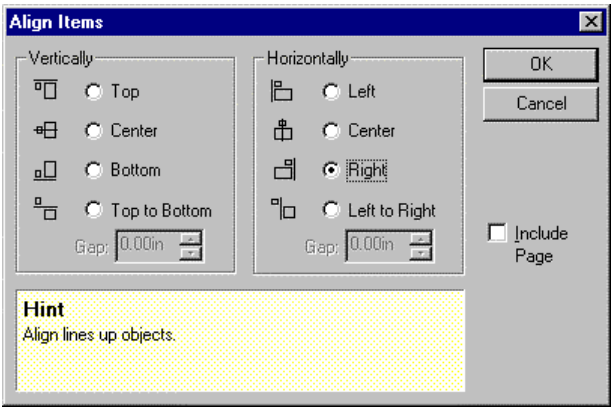
Studio's Text tab to change the font and style. Use the Studio's Color tab to change the color of the label text.

## The Status tab

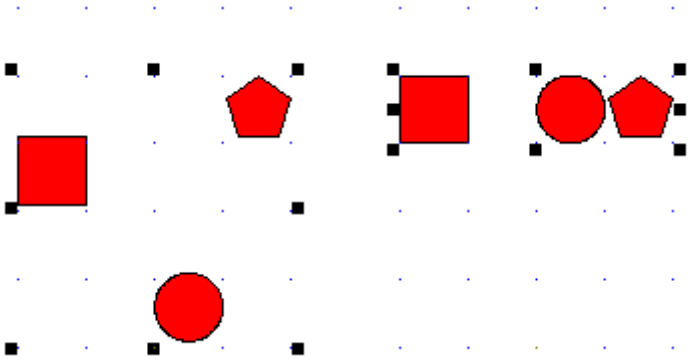
 We've previously used the **Status tab** when we designed a business card in Chapter 6, but it is worth a reminder. If you want to discover or set the exact position and size of an object click on the Status tab button. The Status tab shows you the current position, size, and orientation of an object and allows you to type into it and set the values to whatever you want them to be. The tab shows measurements in ruler units.

## Aligning Objects

The **Align Items** command will take a group of selected objects and align them in one operation. You can access this either via the right-click menu or via the **Arrange/Align Items...** menu command.




The alignment operation that you choose from the Align Items dialog box is applied to all of the objects selected. The alignment is performed within the selection box that surrounds the entire group of objects. For example, if you select "Top," all of the objects align along the top edge of the selection box.



As well as solving any problems you might have with the simple alignment of objects, you can also use it to space objects out evenly. If you select the “Top to Bottom” or “Left to Right” option then you can specify the size of gap to be left between the objects. For example, if you select three objects and align them top to bottom with a gap of one inch, they will be spaced vertically with exactly one inch between each one.

If you select the “Include Page” option then the page is added to the set of objects included in the alignment. In this case selecting “Top” aligns all of the objects in the selection with the top of the page.

# Grouping Objects

You already know that you can select a number of objects and work with them as if they were a single object as a multiple selection. You can also turn a multiple selection into a **group** by clicking the **Group/Ungroup** button on the Standard toolbar or by using the **Group/Ungroup** command in the right-click menu. Another alternative is via the Arrange menu. From this point on the group of objects behaves as if it were a single graphical object. The HintLine tells you when a group is selected, or you can check the state of the **Group/Ungroup** button (up or down).

The advantage of converting a set of objects into a group is that it is easier to select and edit. However, once objects are in a group, editing is also restricted in that you cannot edit any of the individual objects that make up the group. If you want to do this you have to ungroup them first, edit the objects you want to change, and then group them again.

Groups can cause confusion if you aren't aware that they exist. For example, when you import a vector image you have the option of importing it "grouped" or "ungrouped." Grouped makes it easier to position and size the item, but you have to ungroup it to edit the separate objects that make it up.

If you do ungroup an imported item, then the problem is re-selecting all the objects that used to make it up. The solution to this is to use layers, discussed later in this section.

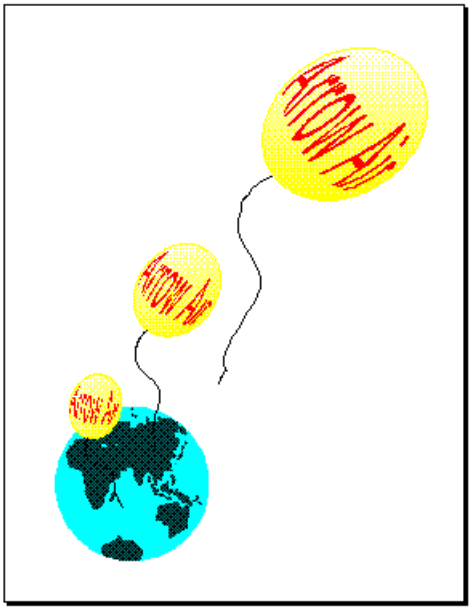
# A Balloon Project

If you want to use a complex object repeatedly in a design then using grouping saves a lot of effort.

Here we have created the effect of a stream of balloons floating away from the same point on the earth. Each balloon is actually a group comprised of three objects: an ellipse, enveloped text, and a line.

To create the original balloon, we applied an envelope effect to the text object "Arrow Air" and placed it over an ellipse. The string was drawn with the Freehand Line tool, then lengthened with the Node tool. Then the three objects were grouped using the **Group** button on the Standard toolbar. Finally, we resized the ballon to a reasonable working size relative to a clipart globe (the same one used in Chapter 6's business card tutorial).

To replicate the balloon a couple of times, we used a shortcut copy/rotate technique. First we selected the object with the Rotate tool, then dragged an edge handle while holding down the **Ctrl** key. Each operation produced a slightly rotated copy.



Finally, we moved and resized the three balloon groups for a perspective effect. You can see how grouping greatly facilitated this work—all it took was a bit of forethought. And when it comes to saving time, isn't the extra effort more than worth it?

Turning off guides and the snapping grid using the command **View/Layout Tools** gives you a clearer view of a drawing.

# Locking an Object's Position

Suppose you've created a complex, multi-object cluster and don't want to risk moving or deleting it. The solution is to group it and lock it. (You may recall, from Chapter 3's bookplate project, unlocking the "Dinosaur" Backdrop Wizard graphic prior to working with it.)

To lock objects, use the **Arrange/Lock Position** menu command which freezes the currently selected objects. You know that an object is locked because when you try to select it the cursor changes to a lock symbol. You can still alter a locked object's fill, line, or transparency properties. To unlock an object select it and use the **Arrange/Unlock Position** command.

# Object Defaults

When you create an object it is formatted with the **default** fill and line settings. The default fill is initially solid black. QuickShapes have a permanent default line setting of “None.” When you create a text object it also has a default font, point size, color, etc.

It’s often easier to set up the defaults before you create new objects, rather than changing the properties later. As mentioned in the previous chapter, there are two basic ways to change the defaults.

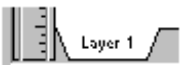
To change the defaults for lines and shapes using the Studio, simply deselect all objects, then click to change settings on the Color, Line, and/or Fill tabs. The next new line or shape you draw will use these settings. To change the defaults for text objects, deselect all objects and use the Text tab instead.

Another approach is to create one object with the settings you’d like to use as defaults, and then update the defaults in a single step. This approach also allows the default properties of connectors and dimension lines to be set. Simply right-click the object you want to use as an example, and choose **Update Defaults**.

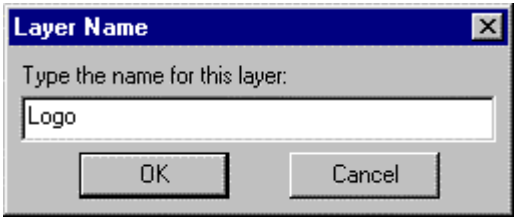
# Layers

If you are drawing something simple, you don’t really need to make use of layers—you can do all your work on the single layer that each new document has. If you are creating something a little more tricky then layers can be a vital aid in separating objects into independent sets. You can think of a layer as a transparent sheet of paper upon which you draw objects. The whole drawing is produced by piling up the layers and viewing all of the objects on all of the layers. The advantage of using layers is that you can choose which layer you are editing and thus make changes without fear of modifying anything on another layer. By building up your drawing from multiple layers you make it much easier to edit. Again, you may wish to refer back to Chapter 3’s bookplate project.

When you first start a DrawPlus drawing there is only one layer as indicated by the tab in the bottom left hand corner (Layer 1).




To add another layer you use the command **Arrange/Layers/Add Layer** or right-click the layer tab and select **Layers/Add Layer**. There’s always a naming dialog; you can name the layer something meaningful, or you just accept the default names Layer 2, Layer 3, and so on.




The new layer is always created after (on top of) the other layers, with its own tab along the bottom left of the edit window. To edit the objects on a particular layer, all you have to do is click its tab.


Initially, objects which are on layers that are not selected are also visible, but you will find that you cannot select them or edit them. This can be slightly confusing at first as you frantically click on an object to no effect! But of course, you can change this state of affairs.

Remember: if you can't select an object then the chances are it is on a different layer.

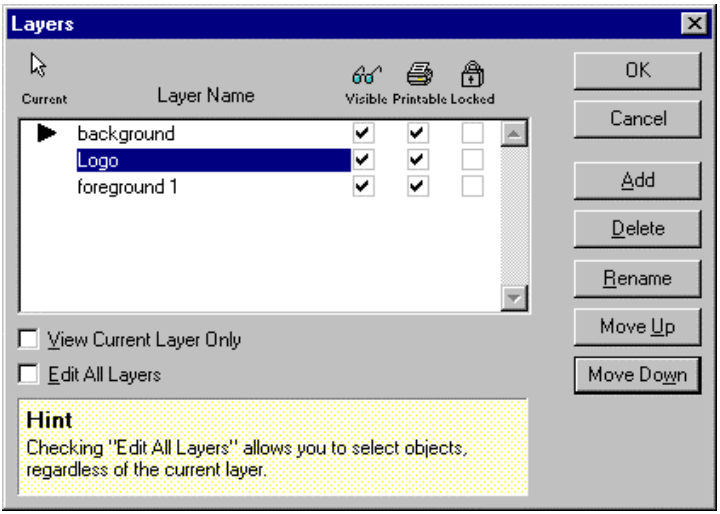
If you want to be able to select and edit objects irrespective of the layer they occupy, right-click any layer tab (or choose **Arrange/Layers**) and select **Edit All Layers**. To view only one layer at a time, right-click a layer tab (or choose **Arrange/Layers**) and uncheck **View All Layers**.

When the drawing is put together from the objects on each of the layers, they are drawn in the order in which the layers were added. Put another way: the layers are drawn in the order of their tabs from left to right. For example, if you want a layer that is to act as a background to all the other layers, make sure it is the first layer.

If you select an object on a given layer you can move it to another layer using the **Move To Layer/Move Forward One Layer** and **Move Back One Layer** commands, which are in the **Arrange/Layers** menu. There's also a **Move Object to Layer...** command that lets you specify the particular layer where the object should go.

If you need an overview of the layers that make up a drawing, then you need to call on the **Layer Manager**. The easiest way to get to the Layer Manager is to double-click any layer tab. You can also right-click a tab and choose **Layer Manager** or use the **Arrange/Layers/Layer Manager** menu command.

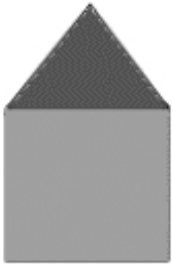
The Layer Manager allows you to add a new layer, rename an existing layer, delete an existing layer and alter the order of the layers by way of the **Move Up** and **Move Down** buttons. If you delete a layer all of the objects on it are lost! So if you want to keep any of them, move them to another layer first.




In addition to modifying the layer structure of a drawing, you can also use the Layer Manager to select whether a given layer is visible by checking or unchecking its **Visible** box. The **Printable** box lets you select which layers will be printed; non-printing layers are handy “for information only.” Finally, the **Locked** check box can be used to freeze a layer and make it uneditable.

Even if you don’t need to make use of layers, some of the Wizards do. For example, the Studio’s Library tab includes Watermarks and Backdrops that add a “Paper” layer to your drawing that sits behind all the other layers.

# The Map Project - Continued



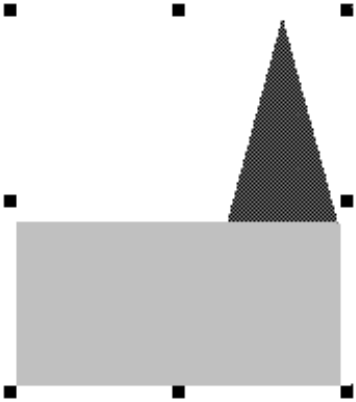
It's time to revisit Chapter 5's sketch map, which we left at a very basic stage. We drew roads and a single symbol for a house made up of two filled shapes—a roof and walls. We left off by giving these two objects contrasting fills. Having reopened your document, select them both and click the **Group** button to turn them into a single combined object.

The final house object can now be selected and sized and if you want more houses it can simply be copied. For now though leave it on the pasteboard.

## Adding a church

To show just how useful graphics objects are, let's add a church to the map as a landmark. If at this point you are starting to work out how to draw a church from scratch you're not thinking hard enough about reusing objects to save time!

To create a church from the house object all we have to do is make a copy of the house and then ungroup it using Ungroup. Once you've done this, you can edit the roof separately from the body of the house. Select the roof, then squash and stretch it by dragging on its handles until it looks like a steeple. Select and stretch the bottom shape of the building in the same way and the final result, after another grouping operation to make it a single object, is a church symbol.

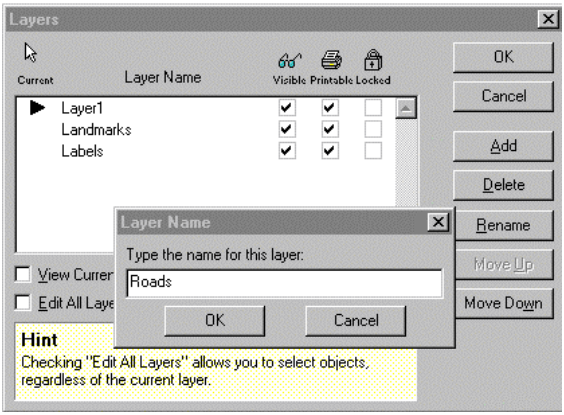


## Layers for different purposes

Before we move any of the building symbols off the pasteboard and onto the page, let's consider how layers might help in drawing a map that is suitable not just for one purpose but for reuse. How often have you drawn a map assuming that a visitor is coming from the North only to discover that they have decided to approach from the East? The roads stay the same but the landmarks they will be aware of are different. Or you draw one map to show the way to your house and realize that something almost the same would serve for visitors to your office—but without the quirky comments!

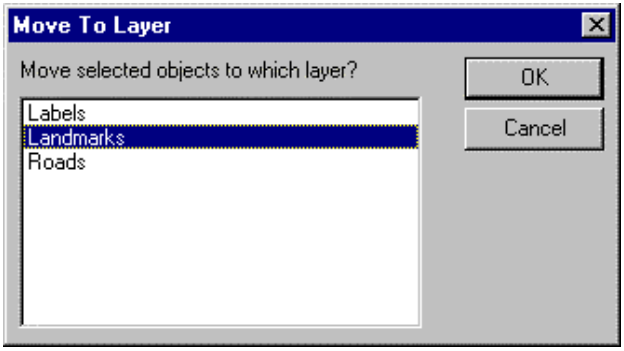
So let's use the existing layer for the parts that don't change: the roads, railways, rivers, and so on. We'll add one layer for landmarks and have another layer for labels, comments, and other text items.

First rename Layer 1. The Layer Name dialog opens from the right-click menu but as we also want to add two more layers, the quickest route is to double-click on the **Layer 1** tab to display the Layer Manager. Click the **Rename** button and name the first layer "Roads." Click the **Add** button for the new layers and give them meaningful names: "Landmarks" and "Labels."




When you return to the page notice that there are now extra tabs for the new layers.


Now it's time to place the symbols on the map, but they were originally drawn on the first (Roads) layer. The solution is to select all of the symbols on the Roads layer that should be on the Landmarks layer and use the command **Arrange/Layers/Move To Layer**.




Now you can select the Landmarks layer and move the house and church symbols into place,, secure in the knowledge that you are not going to disturb the road layout. Then you can proceed to the Labels layer to add text.

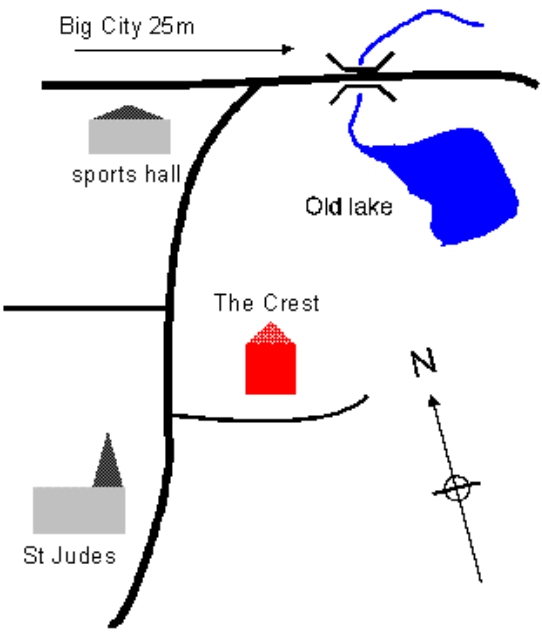
## A compass point

You can carry on adding details to your map for a long time, but one refinement shows just how easy drawing can be with DrawPlus, if you think about it in the right way. To help people know which way North is, it would be a good idea to place a compass arrow on the Roads layer.


If you are thinking about drawing the arrow at the correct angle and then drawing the cross at the center and so on you are still thinking about drawing on paper! Using DrawPlus you assemble the compass arrow more or less automatically.

First draw a long vertical line and select a suitable arrow head for it. Then draw a short horizontal line and a circle using the QuickEllipse tool. If you hold down the **Shift** key while drawing the lines it will be easy to make them perfectly vertical and horizontal. Holding down the **Ctrl** key while drawing the QuickEllipse gives you a perfect circle. Don't worry about trying to make the parts of the compass arrow line up. Simply select them all as a temporary group and use the **Align Items** command to center them horizontally and vertically. The result is a perfect compass arrow which you then can make into a single group.

Finally add the "N" in the correct size and use Align Items to center it on the point of the arrow. Group all of the objects to make one single, composite compass arrow and *now* rotate it to the correct angle.



You can carry on adding to your map until it is good enough to use. Don’t forget to save it because you are sure to need to use it and modify it in the future.

# 9

# Special Effects

# Introduction

What makes a design “good”? Usually it’s a combination of basic principles (composition, color balance, and such) plus an inspirational spark that sets one design apart from the others. Often that spark comes from appreciating what others have achieved, or from trying a technique for the first time. The DrawPlus Design Wizards offer some starting points and (we hope) some incentive to create original designs of your own. It’s also important that you know as much as you can about all the tools at your disposal. Seeing how the tools work, and then trying them yourself, will literally open your eyes to new possibilities—and spur your own creativity.

In this chapter we’ll spend some time looking at tools we may just have mentioned in passing, explore some new ones, and offer some examples of how to “put it all together” for effects you might not have thought possible.

# Text effects

Although you might think of text as just being the mundane, informative part of your design, it often has a key role to play in setting the visual tone. The basic shapes of the letters are controlled by the typeface that you select. A typeface is a family of fonts in different sizes and typestyles—bold, italic, etc. It’s important to understand font choices as a starting point, but with DrawPlus, you can achieve typographic results that go far beyond the limits of particular fonts.

## Font choices

You can categorize typestyles in many ways: for example, as **serif**, **sans-serif**, and **decorative**. A serif font has short lines at the end of each longer line that makes up the letter. Serif fonts are generally regarded as the traditional fonts where sans-serif fonts are the newcomers. Sans-serif fonts look modern, mechanical, and clean. Serif fonts look authoritative and traditional—the original text book style! Often a sans-serif font and a serif font are used in combination (as in this book), with a serif font for legible body text paired with a complementary sans-serif font for headings and emphasis.

Before computers, in the days when every font was equivalent to hundreds of small lead blocks, it wasn’t easy to experiment. Using DrawPlus, selecting a font is easy and you can preview the large number of “decorative” or display fonts which are often neither serif or sans-serif.

The most commonly used sans-serif font is Helvetica which is available as Arial in Windows. The most-used serif font is Times Roman which you know in Windows as as Times New Roman. The *DrawPlus 5.0 Companion* uses these two fonts. There is no “most common” decorative font; it’s up to you to decide on your favorite!

Arial a sans-serif font

Times New Roman a serif font

Mondine SF a decorative font

You can be fairly free in your choice of fonts when creating a drawing but there are some points to remember.

Try to remember the following rules:

- Don’t use too many fonts. It makes a design look messy and difficult to understand.
- Make sure that important text is readable. Never sacrifice legibility for design.
- Choose fonts that work together. Look at your entire design and see if any font looks as if it belongs to another drawing.

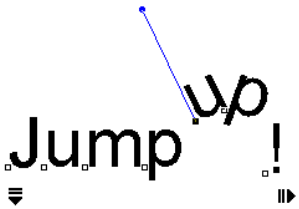
## Arranging letters

Once you have selected a font you also need to think about how best to arrange the text on the page. Most of the time you can let DrawPlus set the distances between letters and words, but sometimes it is worth moving a pair of letters closer or further apart to create an effect. This is called **kerning**. To do it in DrawPlus, you use the Node tool to adjust the letter positions by hand.


To make the job easier, hold down the **Shift** key after selecting a letter to move. This constrains it to move only horizontally or vertically. If you want to move a group of letters, select them one at a time with the **Shift** key held down.

You can take the positioning of letters within text one step further and move letters off the baseline and rotate them. This produces effects similar to the Curve Text Wizard (see below) but with more control. The disadvantage is that arranging text this way is more work!

To move and rotate letters, use the Node tool and drag the letter where you want it; rotate it using the blue handle that appears.



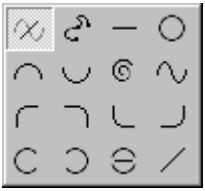

Another very simple and often overlooked technique is to vary the pointsize within a line of text. You can do this using the Edit Text window by selecting just the characters you want to change.


The biggest danger in altering the natural position of letters within text is that you will make the text unreadable. Does the example above read “Jump up” or “up Jump”?

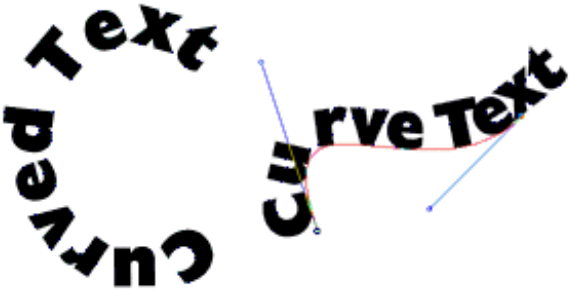
## Text on a curve

Being able to move each character to any location is a powerful way of arranging text. However, for some special effects you will want the text to follow a regular path such as a semi-circle, spiral, or ellipse. You can fit text to a wide range of regular paths using the Curve Text Wizard. Use the menu command **Tools/Curve Text Wizard**, answer all the questions, and drag out the curved text effect on the page. You can start the Curve Text Wizard with or without a text object selected.


As an alternative to the Curve Text Wizard, you can fit the currently selected text object to a curve by clicking on the **Curve Text flyout** on the Standard toolbar.



Using the flyout lets you quickly try out a range of different curves. And you can still edit the curved text with the Text tool!



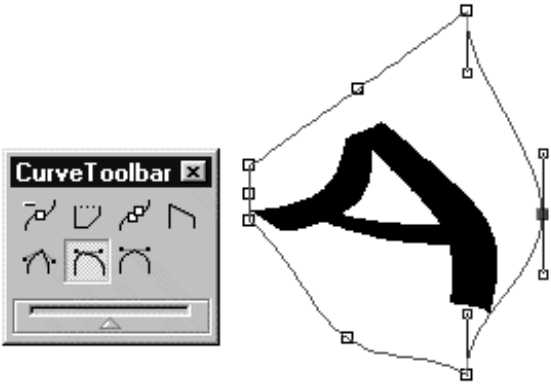

To straighten curved text, simply select the straight-line path in the Curve Text Wizard or Curve Text flyout.

## Enveloped text

An **envelope** distortion is something that you can apply to any object to change its shape without having to edit its nodes. To understand how an envelope affects the shape of an object, imagine it drawn on a rectangular rubber sheet which is stretched to the outline of the selected envelope. As you might expect, this is a very powerful feature for special effects—and not only for text.

The simplest way of applying an envelope distortion is to use the **Envelope Wizard**. Select the object or group of objects you want to distort and choose **Tools/Envelope Wizard**. As the first step, the Wizard gives you the choice of applying the distortion either to the currently selected object or to some new text. The next step lets you browse through the possible envelope shapes and preview their effect.


Once you have selected the envelope you want to use and clicked **Finish** in the final step, you will see the object distort to match the preview. The Node tool is also automatically selected for you and you will see the object surrounded by the outline of the envelope selected. You can use the Node tool to edit the outline by dragging the nodes. The only difference is that the reshaping changes the way the enclosed object looks.



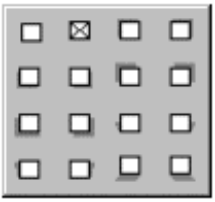

Because you can edit the envelope so extensively, if there isn't one to suit you in the Wizard, select the closest shape and edit it to be exactly what you want.


 An alternative to using the Envelope Wizard is to click the **Envelope** button on the Standard toolbar. This offers you a flyout with all of the standard envelopes available.

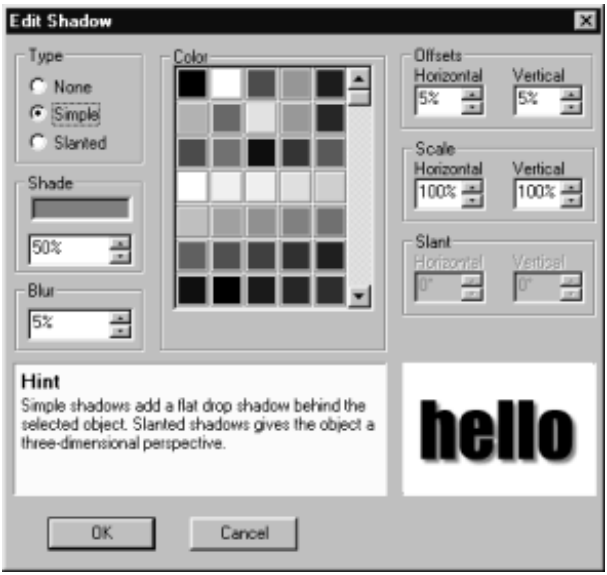
# Shadows

Adding a shadow to an object can be done for a realistic lighting effect, or simply for stylistic value. Shadows are particularly effective with text.

 Single-clicking the **Shadow** button in the Standard toolbar displays a flyout with a choice of preset shadow effects.



Double-clicking the button or right-clicking the object and choosing **Shadow...** opens the Edit Shadow dialog and here you have complete control over the appearance of the shadow added to an object.




There are three choices in the Type box. **None** is used to remove a shadow.

**Simple** is a standard drop shadow. You can change the values in the Offsets and Scale boxes to deepen the shadow and determine the direction light appears to be coming from.

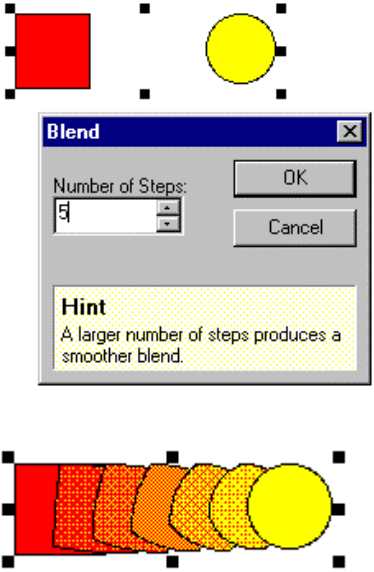
A **Slanted** shadow has the effect of adding depth to the object itself, making it appear three-dimensional. With the option selected you can also enter values for the amount of slant.

The **Blur** control allows beautiful soft edge effects to be given to shadows.

You can see the effects of your current choices interactively in the sample at the bottom right of the dialog box.

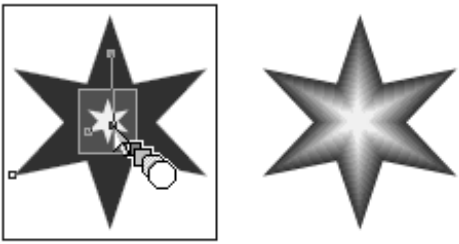
# Blends


The **Blend tool** on the Drawing toolbar enables you to “morph” any shape into any other shape in a specified number of steps. If the two shapes are separated in space, each step creates an intermediate shape, a kind of morphing effect. The result is a group object.




If the starting objects are in the same place, the results can be especially interesting. For example, draw a QuickStar and fill it with a solid fill. Then duplicate the object, shrink it, and fill with a much contrasting color. Center the small star inside the large star (you may want to align their centers).

Now select the Blend tool and move the cursor over the larger star (the larger star object highlights), click and drag the cursor so as it is over the smaller star (this object highlights) and release the mouse button. A dialog asks you to enter the number of steps; try 10 or 15. The result is a unique union of the two original objects!

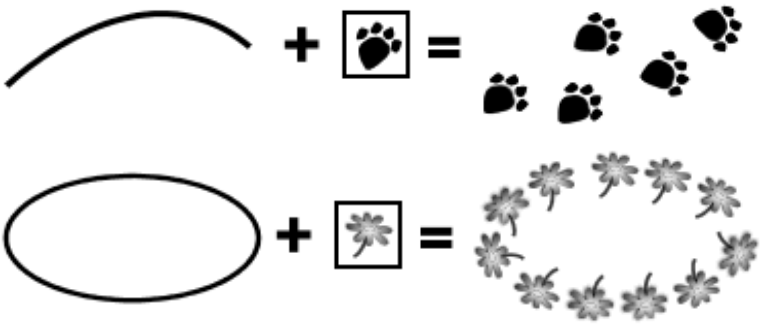


If the two objects you want to blend are quite close together, making selection with the Blend tool difficult, you can begin by selecting them both with the Pointer tool, then using **Tools/Blend** to apply the effect.

Try the same effect with text for exciting results!

## Chain lines

A **chain** (or **chain line**) is a decorative line incorporating one or more individual DrawPlus objects arrayed along its length—rather like a border motif, but with all the freeform adaptibility of a plain line. You can choose from the wide assortment of chain lines in the Studio's Line tab gallery (encompassing all the line categories except "Plain"), edit their properties to suit your needs, or create your own chains from scratch. Apply chains to lines, curves, QuickShapes, even filled shapes... anywhere you want to instantly introduce repeating elements.



Applying a chain line from the Line tab is just like applying a plain line. Just select the Line Type category and drag a thumbnail onto an object (or select the object first, then click the thumbnail). While the pre-supplied chains in the gallery offer plenty of possibilities, it's quite easy to create your own by "stringing together" one or more DrawPlus objects, adding one selection at a time to the chain. (Select the items to be added, then right-click the gallery thumbnail and choose **Add Element**.)

Other right-click options from the Line tab let you add a new chain to a gallery, or delete an existing one. Online help (search “chains” in the Index) includes step-by-step instructions.

Standard Line tab formatting options like thickness, line style, and line end do not apply to chain lines. Rather, there’s a whole separate dialog for customizing chains—either locally (after the chain has been applied to an object) or in a Line tab gallery. To edit a chain, right-click either the local object or the gallery thumbnail and choose **Edit Chain...**.

On the dialog’s **Options** tab, drag the **Global Scaling** slider to adjust the overall proportions of the chain’s elements with respect to the line or shape. You can fine-tune such properties as **Scaling**, **Rotation**, **Spacing**, **Offset**, and the **Order** of individual elements that comprise the chain. We’ve included a few examples below. Again, online help provides complete details.

◀ Original line

Chain applied; default settings ▶

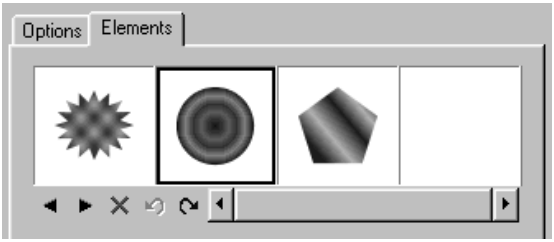
◀ Spacing uses smaller **Gap**

Rotation set to **Follow Path** (local line slope) ▶

◀ 2 **Dabs** (overlaid elements), with a Rotation **Increment** of 30º between elements

Order is **By Direction**: Note gray arrows appear where the line slopes up, blue where it slopes down ▶

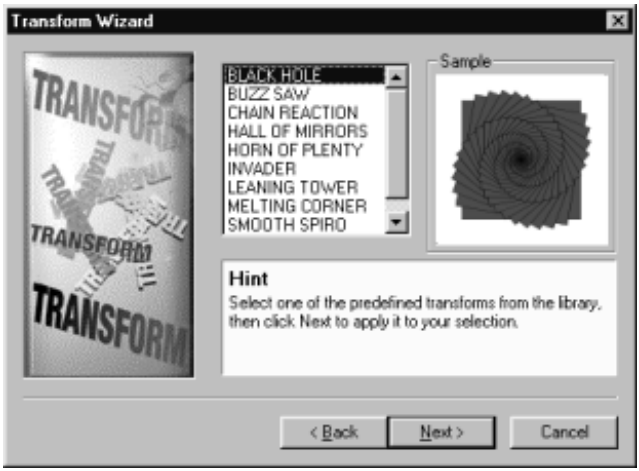
The dialog’s **Elements** tab lets you rearrange the sequence of elements in a chain. To shift an element, click to select it, then click the **Shift Left** or **Shift Right** button. To delete a selected element, click the **Delete** button.




# Multiple copies

## The Transform Wizard

The **Transform Wizard** lets you make multiple copies of one or more selected objects, with a transformation applied to each successive copy in the series. You can choose from predefined transforms, or specify the type of transformation (rotation and/or scaling), the number of copies, and a positional offset between copies. It's a quick way to generate elements for an animation sequence involving rotation or directional changes (see the next chapter).




To use the Transform Wizard select **Tools/Transform Wizard**. Try using the Transform Wizard with simple, single objects or objects with a clear fill. It's easy to create amazing "spirograph" style effects.

To turn the Transform Wizard on or off, choose **Options...** from the Tools menu and click the **Ease of Use** tab, then check or uncheck **Transform Wizard**.

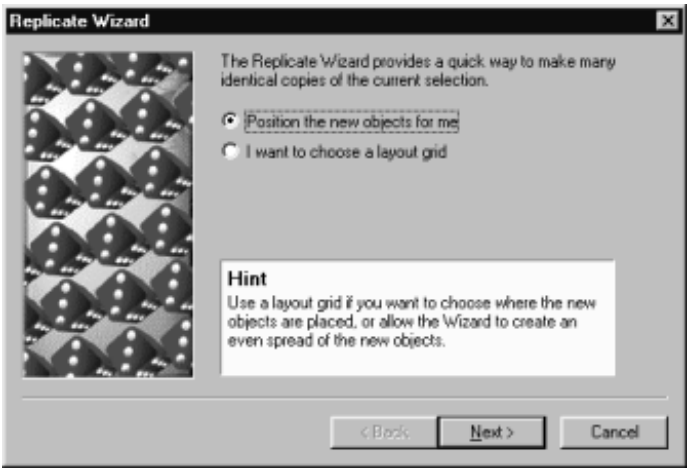
If the Wizard is off, **Transform...** will be available on the tools menu. This shows a single dialog that lets you set the transform options.

## The Replicate Wizard

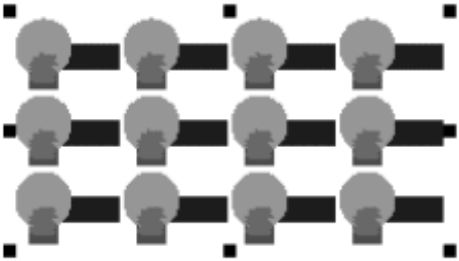
The **Replicate Wizard**, as you may remember from Chapter 3, lets you fill a grid with identical copies of one or more selected objects. For example, you can specify three columns and four rows, for twelve identical copies. You also have the option of letting DrawPlus determine the grid layout for you. The tool comes in handy for creating repetitive patterns or producing artwork for label sheets.

Before you use the Replicate Wizard, size the object to be cloned and place it in a convenient starting position—usually the top-left of the page.

To use the Replicate Wizard select **Tools/Transform Wizard**.




If you ask the Replicate Wizard to position the objects for you (the default), it will devise the most suitable grid. If you prefer, you can specify a layout grid in terms of column and rows. The only point to remember on the next page of the Wizard is that one object already exists. So if you want a total of 12 objects you need to ask for 11.



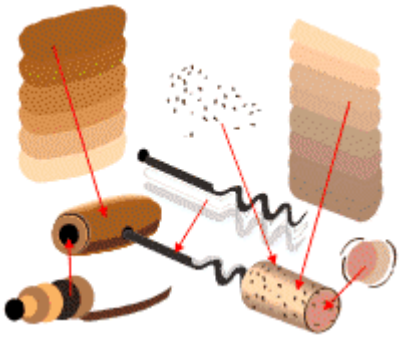
To turn the Wizard on or off, choose **Options...** from the Tools menu and click the **Ease of Use** tab, then check or uncheck **Replicate Wizard**.

If the Wizard is off, you'll see the **Replicate...** command instead. This brings up a single dialog that lets you specify the number of rows and columns, as well as the X and Y spacing (horizontal and vertical gap) between objects.

## Contouring

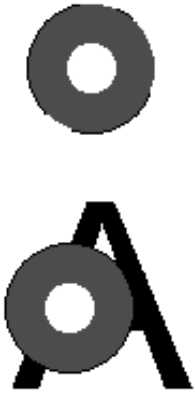
The **Create Contour** function lets you reproduce a single object slightly larger or smaller than the original, for perspective or shape effects. For example, you can quickly create outlines around text.

In the illustration below, all the component objects have been detached from the completed drawing of a corkscrew. Notice how the artist achieved a 3D look for the handle and cork using both blending and contouring, by stacking progressively smaller shapes, using differently colored fills graded from dark to light.



To make a larger or smaller copy of an object, select the object you want to reproduce, then choose **Create Contour...** from the Tools menu. Use the dialog to specify the degree of difference and position of the new object with respect to the original, and click **OK**. A reduced copy appears in front of the original object; an enlarged copy appears behind it. The new object always has a black line and white fill for visibility, but it's selected so you can apply a custom line and fill right away.

## Combining Objects



How can you produce a shape with a hole in it? The most obvious way is to draw the hole shape inside the object and then fill it with the background color. For example, if you draw two circles, one within the other, and fill the inner one with white, the result looks convincing.

But as soon as you place the object over another one you quickly see that it isn't as convincing as you thought because you can't see through the hole!

But why waste effort thinking about the problem, when DrawPlus includes all the tools you'll need to carve new shapes out of old shapes—the **Combine**, **Add**, **Subtract**, and **Intersect** buttons on the Standard toolbar!

Combine works a bit differently from the other three, which are grouped as "Join" commands on the Arrange menu. It's worth keeping the distinctions in mind:

- With Combine, you're creating a temporary composite object with "holes" on the inside where two or more component objects used to overlap. This combination, like a group, can be broken apart later.
- With the Join commands, you actually produce a permanent new object out of any two selected objects. The action can't be reversed, except by using the Undo command.

Now let's see how the commands actually work. In all cases, you first have to select the objects you want to combine or join, then click the appropriate button.

Returning to our "hole" problem, if the only goal is to create a doughnut (torus) shape, then either Combine or Subtract would do the job. Just place a small circle over the large circle, select them both, and click either button. Problem solved! (Of course, you could simply have used a QuickDonut in the first place...yes, there really is one on the QuickShapes flyout.)

Which function you choose may depend on whether you want to restore the component objects later (in that case, choose Combine). But each tool has its advantages.

**Combine** can work on more than two objects. And if the selection includes a number of objects and some of them can't be combined (groups, open lines or enveloped objects, for example), Combine will still handle any valid objects within the selection. The Join functions, on the other hand, are *only* enabled if exactly two valid objects are selected. But a Joined object can be edited with the Node tool, while a Combined object cannot. (For the complete rundown, consult online help.)

**Join/Subtract** is useful as a quick cropping tool on shapes and pictures. For example, you can use a QuickBox as a straight-edge "eraser." Just place the box over the edge of the object you want to trim, select both objects, and click Subtract. The result is a single new shape.

Another trick is to slightly offset two pieces of text, then use the Subtract tool to create shapes that can be used for highlight and shadow effects over existing text.

**Join/Add** creates one new object that's the sum of any two selected objects, whether or not they overlap.

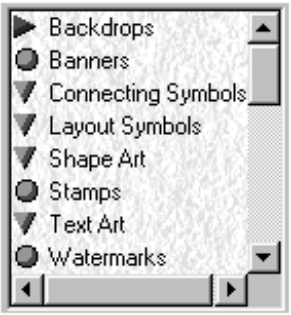
**Join/Intersect**, like Subtract, requires overlapping objects—it retains the overlap and discards the rest.

Using just QuickShapes and the Join tools, you can create a tremendous variety of special shapes. You may never have to use the Freehand tool again!

# Studio Library Elements

We began this chapter remarking that Design Wizards were a good starting point, both for graphic objects and for inspiration. And we've covered a number of other Wizards here that facilitate special effects. So it's only fitting that we conclude by mentioning yet another category of DrawPlus wizardry—the art, text, and shape elements you'll find listed on the Studio's Library tab. If you tried the bookplate project in Chapter 3, you've already seen how easy it is to add and edit Library tab elements.

Actually, you'll have more fun discovering these resources by yourself. All the categories are right there in plain view, with thumbnails ready to drag and drop onto your page for serious design work, experimentation, or a bit of both. They're especially well suited to Web page construction.




**Shape Art** includes an assortment of prebuilt figures that can be used separately or in combination with other objects. Many are just waiting for text to be placed over them...

**Text Art** lets you enter your own text and see it rendered in any of a variety of ways, over different backgrounds and with intriguing color and shading effects.


**Banners** and **Stamps** round out the collection will an all-purpose assortment of greetings, messages, logos, and fun stuff.


Try “deconstructing” some Wizard elements to see how they’re put together. And then go off and create your own masterpieces!


# Web Graphics

# Introduction

DrawPlus has a lot to offer if you're producing either static or animated graphics for Web pages. It's hard to overstate the advantages of scalable vector graphics, which let you work at any level of detail and revise any portion of the image. On top of that, DrawPlus adds export optimization and browser preview capabilities, so you're assured of getting the results you want while minimizing file sizes. This chapter explains how to create animated GIFs, and how to add hyperlinking and onscreen interactivity to things like Web buttons and menus.

# Animation Basics

The term "animation" can cover everything from flip-books to Disney movies. We'll focus on what DrawPlus does best: create animated GIFs specifically for Web pages. You'll quickly see that using DrawPlus, you can produce results that equal or surpass anything you're likely to see on the Web.

Creating Web animation with DrawPlus 5.0 is easy—there's no special skill required. Of course, the more comfortable you are with the whole range of DrawPlus tools and effects, the further you can go. If you're just starting out with DrawPlus, you may wish to take a look at the first four QuickTours to familiarize yourself with basic terms and concepts. (You can safely skip QuickTour 5, "Creating Animations"—this chapter will provide more depth plus the advantage of hands-on practice.)

Bear in mind that DrawPlus isn't an animation *editor* as such. You can preview your work and export it to an animation file format (GIF) but you can't actually import or play back content in that format. DrawPlus is a powerful vector graphics program, and the control that gives you over objects and special effects makes it ideal for generating animated GIFs. Chances are you won't need a specialized animation editor. However, when it comes to actually using your animations on Web pages, you'll need a program capable of creating Web pages, such as Serif's PagePlus.

What is animation? Like movies and TV, it's a way of creating the illusion of motion by displaying a series of still pictures, rapidly enough to fool the eye—or more accurately, the brain. Professional animators have developed a whole arsenal of techniques for character animation—rendering human (and animal) movement in a convincing way. We can leave most of this to the experts. Web graphics, as a rule, are small (mainly to keep file size to a minimum) and most often involve shape and color transformations rather than realistic portrayals. So let's get started.

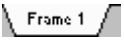
## Spinning a spiral

We'll want to begin with a blank slate, so start DrawPlus (or choose **File/New** if it's already running). Select **Create an Animation** from the Startup Wizard, scroll down in the "page size" list and select "Logo 1," then click **Finish**.

(If by chance you've turned off the Startup Wizard, choose **File/New** and select any page size. When the new document opens, choose **Convert to Animation** from the File menu.)

A new document window opens, with DrawPlus in Animation Mode. If you've already used DrawPlus for other work, you may notice a few subtle differences: a yellow (instead of white) pasteboard, a tab at the lower left labeled "Frame 1" (instead of "Layer 1"), and the **Animation toolbar**, just below the Standard toolbar.

The "blank slate" we've started with is actually the first frame of our animation, as its label signifies.




When working with animations, it is often better to use pixels as the ruler units for positioning and sizing objects as this gives a clear impression of the size and quality likely to be produced when the animation is used on a Web site. **Select Tools/Options...** and use the Layout tab to change your ruler units to pixels.

Note that you will want to change your ruler units back to a different unit when working on different drawings – use the same dialog to switch to a different ruler unit whenever required.

What we'll do now is create a series of six frames, each with a slightly different image, and then play them back to preview an animation.

 Click the **QuickShape** button on the left (Drawing) toolbar.

 Select the QuickSpiral—the third tool down on the left of the flyout. Holding down the **Ctrl** key, click and drag on the page to draw out a spiral about 150 pixels on the rulers. (The **Ctrl** key constrains the shape to be round, not oval.) Leave the spiral's control handles set as in the illustration.

Now let's make the spiral spin. Imagine the figure as a pinwheel that you could turn by hand, pausing at regular intervals to record its new position as another picture. Eventually, it would get back to its starting point, and if we played back the pictures in succession we'd get the illusion of rotation. If we created a **loop**, each time jumping back to the first frame after playing the last, we'd get the illusion of continuous rotation. So let's do just that.

 Click the **Clone Frame** button on the Animation toolbar. This copies the contents of the current frame (Frame 1) to the end of the frame sequence, as Frame 2 in this case. (Be sure to click the correct button; if your new frame is blank, you clicked the New Frame button by mistake, select Undo and try again.

 Now choose the **Rotate tool** from the Drawing toolbar and click on the spiral to select it. Be careful not to drag when you click; we don't want to move the spiral. (If you accidentally do move it, select undo.) You'll see the spiral's rotation handles. Holding down the **Shift** key to constrain the rotation, click on the top right corner handle and drag clockwise for two 15º increments, or a total of 30º.

You can check that the adjustment is correct by clicking the Frame 1 tab to see the starting spiral, then the Frame 2 tab. You should notice the beginnings of the rotation effect by toggling between the two frames.

When flipping between adjacent frames like this, you may find it more convenient to click the **Previous** and **Next** buttons on the Animation toolbar.

 **Previous**  **Next**

Make sure you're on Frame 2, then click the Clone Frame button again. This time, Frame 3 appears. As before, select the spiral object carefully with the Rotate tool and **Shift**-drag to rotate it through another 30º. The figure on Frame 3 is now rotated 60º from its starting position. Again, toggle between Frames 2 and 3 to make sure the spiral's center hasn't shifted.

Repeat this process three more times, 30º at a time, to create Frame 4 (90º from the starting position), Frame 5 (120º), and Frame 6 (150º). Since the spiral has two "tails," once it gets halfway around it will be right back where it started, as far as the eye can tell. So we don't need to generate a 180º view—in fact, we're done!

## Previewing the animation


Click the **Preview Animation** button on the Animation toolbar. The animation loads into the Preview window and begins playing at its actual size and speed. Notice that you see only the drawn portion of the animation (the spiral)—any extra surrounding white space is cropped away.

You can use the control buttons (Play, Stop, Back, and Forward) to review individual frames. For example, if you notice that the rotation seems a bit eccentric, you can step through the frames to locate one or more spirals that may not have been rotated correctly.

If you want to preview the animation in your Web browser, choose **Preview in Browser** from the File menu. This actually exports a *temporary* copy of the animation, using the current export settings (see below) and displays it in your Web browser. You can leave the browser open and DrawPlus will find it again next time you issue the command.

## Saving the DrawPlus file

DrawPlus saves animation documents in the proprietary .DPA format (Drawings are saved as .DPPs). Once you've got the spiral spinning smoothly, choose **File/Save...** and congratulate yourself. You're now an animator!

## Exporting animations


Once you've previewed the animation and made necessary any last-minute changes, click the **Export Animation** button on the Animation toolbar. The **Export Optimizer** appears. If you're just testing export at the moment, you don't need to make any changes—but here's a summary of the options for future reference.

The Animated GIF format is preselected on the **Format** tab. The **Settings** tab lets you scale the animation to any size as required. Leave the dpi setting at 96 for standard screen resolution. If you require your animation to look at its best on 256 color displays you should use the **Web-safe** palette. This uses only colors reproducible in the 216-color palette used by Web browsers. With most people using hi-color or true color displays, the **Optimized** palette affords greater display quality, allowing the DrawPlus export filter to determine the best colors to use.

Check **Transparent** to turn unfilled regions of your graphic into transparent regions in the GIF so any Web page background will show through, and **Interlaced** to have the graphic appear progressively (line by line) in a browser. Keep **Anti-aliased** checked to retain the smooth appearance of your DrawPlus graphic, which will be anti-aliased to the background color(s) around its edges when it's exported; uncheck for a sharp edge. For full details on GIF export options, see this chapter's later section on "Optimizing Graphics."

On the **Animation** tab, which only appears in Animation Mode, you can preview single frames or run the animation sequence, and make some final playback adjustments to the animation properties.

If certain frames seem to go by too quickly or slowly, you can select any frame and enter a value greater than 0 (milliseconds) in the **Duration** box. The initial value matches the global duration setting (to be discussed a bit later) and any new value you enter overrides the global setting, just for that particular frame.

 If you want the sequence to play through only once and end by redisplaying the first frame, click the **Fixed Loop** button and type "1" in the box. Enter a higher value to repeat the sequence a fixed number of times.

 Click the **Endless Loop** button to have the sequence repeat indefinitely.

When all the settings are correct, click the **Export** button (or **Close** to simply record the settings if you plan to preview in a browser first). Provide a file name and folder location, and click **Save**. You needn't worry if you have extra white space around your image. Any unused border area will be cropped automatically, just as you saw in the Preview window.

## More on Animation mode

Before we move on to other animation projects, here are a few other basic things to know about working in Animation mode.

You can convert an existing drawing to an animation by choosing **Convert to Animation** from the File menu. Note that once your work has been converted to animation, it cannot be converted directly back to a drawing—so be sure to save the drawing if you'll need to use it again. With the exception of drawings that have a "paper layer," discussed later, all layers in your drawing will be combined into a single frame of animation.

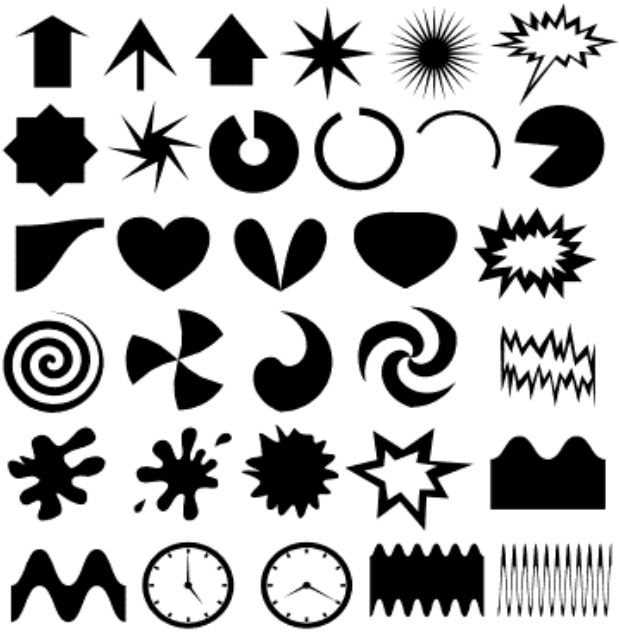
 To create a new blank frame rather than a clone of the current frame, click the **New Frame** button on the Animation toolbar. The new frame appears as the last frame in the series.

 To delete the current frame, click the **Delete Frame** button.

As an alternative, you can right-click on a frame tab and choose **New Frame**, **Clone Frame**, or **Delete Frame**.

## QuickShape Animation

Besides the spiral, the QuickShape flyout offers dozens of shapes, each with its own variations. The ease with which you can alter QuickShapes (using the Node tool) makes them ideal starting points for geometric animation effects, whether used singly or in combination with text or other elements.



You can use the same basic approach we followed to create the spiral animation with any QuickShape. First experiment with the possible variations: dragging the handles provides an instant preview of many possible animation effects. Create a frame sequence by cloning frames and adjusting the object as you go. Of course, you can vary the size and position of the QuickShape, too.

A QuickWave becomes a flexible spring...

A QuickFlash becomes an explosion...

And a QuickDonut (with a white circle for an eye) becomes a hungry sprite.


## Fooling the Eye

Take a moment to examine one of the Sample animations included with DrawPlus 5.0. Choose **File/New** and select the **View Samples** option from the Startup Wizard menu. From the samples list, choose “EYE.DPA” (not the .DPP file of the same name). You can preview the animation—an eye blinking—right in the dialog. Go ahead and open the file.

We won’t analyze how the image was developed, although it’s a fine example of fills, blending, and other DrawPlus techniques. The point to notice is that there are only two frames in the whole document, one where the eye is open and the other where it’s shut. If you were to inspect the timings of the two frames, you’d find the “open eye” frame lasts a full 1.25 seconds, while the “shut eye” frame lasts only a fifth of a second. Although we never actually see anything in between, apparently our “mind’s eye” supplies the missing motion. It’s a convincing illusion.

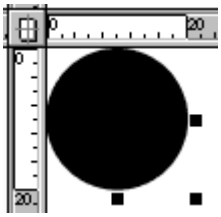
You don't have to be an expert on human perception to create skillful animation, but your animation will improve if you keep an open mind about what makes a given effect succeed or fail. In small-scale animations, it's rarely a question of how detailed or realistic the image is. More often it boils down to careful positioning, sequencing, and timing, as well as playing with the laws of physics to reinforce specific actions. And the human mind is always part of the equation.

In this section, we'll try some more mini-projects, explore the rest of the DrawPlus animation tools, and touch on some tricks of the trade.

## Follow the bouncing ball

Ready for another simple exercise? Open a new animation document, this time using the **Small Logo 1** page size.

Begin on Frame 1 by drawing a QuickEllipse circle, holding down the **Ctrl** key to constrain its proportions. Adjust it so it's 20 pixels across.
To measure the object precisely, select it and then double-click the ruler intersection. This will move the ruler origin to the selected object, and you can read its dimensions as the white portion along each ruler. When you've adjusted the circle's size by dragging its lower right handle, double-click the intersection again to reset the rulers.




Position the circle on the left side of the frame. We're going to create three more frames for a "bouncing ball" effect, and examine how frame timing affects the result.

DrawPlus supports **onion skinning**, a standard animation technique derived from cell animation, where transparent sheets enable the artist to see through to preceding frame(s). It's useful for enabling precise registration and controlling object movement from frame to frame. You can turn the feature on or off (the default is off) as needed, and set the number of previous frames that will be visible (normally one).

Turn onion skinning on now by right-clicking the frame tab and checking **Onion Skinning** on the menu. Now clone the frame. In Frame 2, click to select the ball object, then hold down the **Shift** key and drag it horizontally to the middle of the frame. As you drag the object, you'll see another object behind it that remains on the left of the frame. That's Frame 1's object showing through to Frame 2. With onion skinning on, it's easy to make sure both objects are still aligned with the same vertical position. (If the new one shifted, delete the frame and try again.)

Then clone Frame 2 and **Shift**-drag the ball again, this time over to the right side of the frame. Again, you can check its position with respect to the center object.

Finally, return to Frame 2 and clone it. The cloned frame appears as Frame 4, to complete the four-frame sequence.


Now click the **Preview Animation** button and check out the results. You may be impressed that the ball moves—but it's not (yet) a very good animation. Chances are that as you watch the preview, you'll quite often notice two of the balls appearing visible at the same time, hardly a convincing illusion of motion. We can do better.

## Timing is everything


Click the **Animation Properties** button on the Animation toolbar. In the dialog, you'll see that the **Duration** setting is currently 10/100 sec, which works out to 10 frames per second. This is the default frame rate, and if the box next to the timing is checked, it means that the rate applies globally to all the frames: each frame appears onscreen for exactly 10/100 of a second. Let's experiment by varying the timing.


Try a duration value of 5/100, click **OK**, then preview the animation again. This time, at 20 frames per second, it's even worse—now all three dots appear nearly simultaneously. At this setting, the brain just isn't able to process the frames separately.

Return to the Animation Properties dialog and try 20/100 this time, then preview again. Well, at least at 5 frames per second the “dots” have turned into one “ball” that appears to move sideways. But the motion has a sticky, jerky quality. If you try a higher frame duration, the separate jumps are only accentuated.

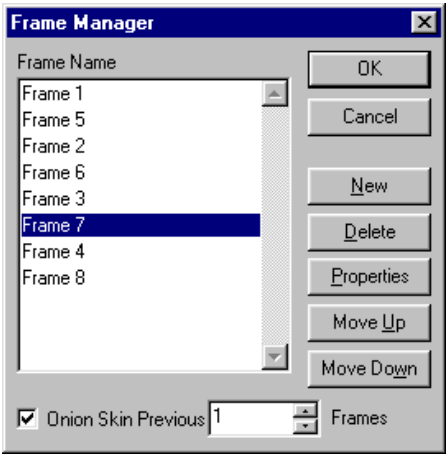
What’s wrong with our sequence is that we don’t have enough in-between frames to create the impression of smooth motion. There should be some overlap between the ball objects from frame to frame, so the viewer’s mind will “fuse” the position changes instead of perceiving them as jumps.

We’ll need to add four intermediate frames: two as the ball moves from left to right, and two more as it returns from right to left. Start by cloning any one of the frames, which will produce a new last frame, Frame 5. Then repeat the cloning three more times, each time from the last frame. Now Frames 5, 6, 7, and 8 exist, but they’re out of order and the objects need positioning on each one.

As noted earlier, you can override the global duration setting for individual frames using the Export Optimizer’s Animation tab. In passing, notice that the Animation Properties dialog duplicates another property that’s settable in the Export Optimizer: whether the sequence will loop continuously (the default) or repeat a certain number of times and then stop.

## Using the Frame Manager

First let’s locate the new frames properly in the sequence. Right-click any frame tab and choose **Frame Manager**. (You can also double-click a frame tab.) The Frame Manager dialog, comparable to the Layer Manager in Drawing Mode, lets you view the whole sequence of frames as a scrolling list and reorder the sequence if you wish. (Notice that you can also add or delete frames, set onion skinning options, and access individual frame properties, which we’ll discuss shortly.)




Select Frame 5 and click the **Move Up** button three times, until Frame 5 is between Frames 1 and 2 in the list. Move Frame 6 between Frames 2 and 3, and move Frame 7 between Frames 3 and 4. (The frame numbers, like layer names in Drawing Mode, are arbitrary and for your convenience only.) Click **OK** and you'll see the frame tabs update to reflect the revised sequence.

 Now to work on the object positioning. To access Frame 5, you may need to click the left-arrow button to the left of the frame tabs. It's also helpful to drag the separator bar between the tabs and the lower workspace scrollbar, to see more tabs at a glance.


With Frame 5 displayed, **Shift**-drag the ball object horizontally so it's to the left of the underlying (Frame 1) object, just barely overlapping it. Step to the next frame to make sure Frame 5's object is halfway between the left and middle positions.

Go to Frame 6 and position its object halfway between the middle and right positions. Frame 7 will be a repeat of Frame 6, and Frame 8 will be just like Frame 5.

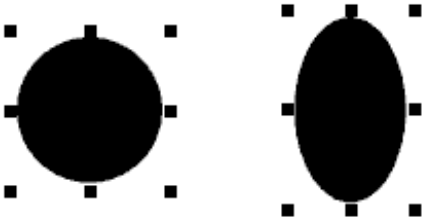
Now try previewing the animation. The in-between frames should make quite a difference! Adjust the duration setting for best results. Settings of 10, 15, or 20/100 of a second should all produce acceptable smoothness.

In general, the right amount of in-betweening and the optimal frame timing will depend on how far your objects need to travel, and how fast you want them to get there.

## A better bounce

We've got a moving dot now—but is it a ball bouncing? Not quite yet. When a ball hits a wall, it doesn't just change direction. A collision happens. The ball squashes and unsquashes, and animation can exaggerate this otherwise subtle distortion to add visual interest.

It's easy enough to achieve. On the two frames where the ball reaches the end of its travel—Frames 1 and 3, assuming the original numbers are still intact—we need to resize the objects a bit. On each frame, select the object and drag a side handle inward to squash the ball. Since the ball will look strange if it just gets narrower (where did its volume go?), don't forget to stretch it out slightly, too: drag the upper middle handle up slightly, and the lower middle handle down the same amount. Keep the object's center fixed.



Now play back the results, and see the difference. Here's something that a viewer might recognize and respond to. You can't see the "wall," but the ball has to be hitting something, right?


One more adjustment may make a difference. Select Frame 1 and click the **Frame Properties** button on the Animation toolbar. (Notice in passing that you could change the frame's name here, if you wanted to.) The duration setting shown in the dialog matches the global setting you're using for the sequence as a whole. Try increasing it slightly (remember, a small change can make a significant difference). If your global setting is .15 second, try upping that on Frame 1 to .20 or .25. Do the same for Frame 3. The point is that when the ball hits the wall, it takes time to stop, squash, and unsquash before rebounding. A subtle increase in duration on these "contact" frames helps make the collision, represented as it is by only one frame, seem that much more believable.

Of course, there's nothing especially believable about a ball that caroms endlessly between two walls... but knowing when to exaggerate physical realities to make a point, and when to ignore them completely, is part of the skill (and fun) of animation. Anything that gets your point across with more impact and less confusion is worth trying.

# Other Animation Techniques

## Text animation

So far we've dealt exclusively with QuickShape objects, but the same basic principles of positioning and timing apply to any object you want to animate, including text. As you may know from working with text in Chapters 6 and 9, DrawPlus gives you a wide choice of ways to vary text, ranging from simple size or fill changes to more complex effects like envelope distortions or blends. As with QuickShapes, any ways that you can vary an object's appearance can be put to good use in animation.

If you've got the *DrawPlus 5.0 Design CD*, you'll find a range of instructive examples of text animation among the Design Wizards. These let you enter your own text, then deliver a ready-made animation. Take a look at the **Text Effects** category, or use these brief descriptions as inspiration:

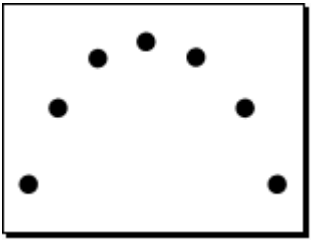
- In the **Effects** subcategory, "Effects 01" varies the extend of transparency over the text to produce a soft-edge wipe transition.
- "Effects 02" rotates the text around its center (just like the spiral you created) through 360º, while varying its size.
- In the **Text Scenes** subcategory, which adds backgrounds behind the text, "Falling" produces a flip effect by vertically stretching and compressing the text with respect to a central axis.
- "Space" propels the text through the cosmos by rapidly reducing it as it moves toward a vanishing point.
- Examples in the **Distorted** category employ curved text sequences.

## Background frames

Using the Frame Properties dialog, you can designate any frame as a **background frame**, which will remain visible while the following frames animate "over" it.

Typically, this would be the first frame in your sequence—for example, a clock face that remained static while hands (on the following frames) revolved around the dial. You might want to try adding a background frame to the “bouncing ball” animation, with a simple rectangle that the ball can bounce around in. A background frame remains visible until superseded by another frame with the Background attribute.

You can use a background frame as a positioning aid while you’re creating an animation and then delete it before exporting. For example, suppose you wanted to show a frog jumping back and forth between two lily pads. To be convincing, the jump would need to traverse an arc—that is, slowing down slightly while nearing the high point, then accelerating a bit on the downward side. You could mark the path with a series of objects on Frame 1:



Then, with Frame 1 designated as a background frame, you’d have a visual guide to help you place the “frog” in the correct positions, shown by the dots, on the following frames. You can delete Frame 1 later.

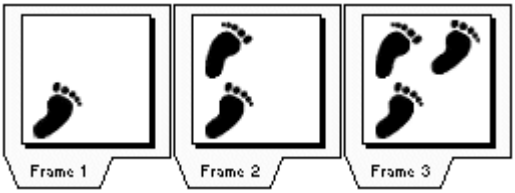
If you create a backdrop, watermark, or full-page border in Drawing Mode (for example, by running the Backdrop Wizard, Watermark Wizard, or Border Wizard), the resulting object gets placed on a special bottom layer called the **Paper layer**.


If you convert a drawing with a Paper layer to animation, you'll find you have two frames rather than the usual one to start with. The first frame will be named "Paper" and will have the Background attribute, on the assumption you're going to want it visible behind the other frames. Likewise, if you use one of these three Wizards in an animation, the result will automatically go onto a new first frame.

## Overlay frames

The Frame Properties dialog also lets you designate a frame as an **overlay frame** whose non-drawn or blank portions become "transparent," so the contents of the preceding frame show through. The effect is rather like having onion skinning turned on, except that the overlay property carries over to the final animation. The main advantage is saving you the time of having to copy or redraw objects in a series where each frame builds cumulatively on previous frames.


For example, you could show a series of footprints being laid down, starting with the first footprint in Frame 1, the second in Frame 2, and so on. Using overlay frames, since all the footprints would remain visible, you wouldn't have to place more than one object in each frame. (You can actually see this animation in QuickTour 5.)




## Using frame edges

Suppose you want a collection of "bubbles" to appear to float out of a frame. The trick is to use the edge of the page (where it meets the pasteboard) as your frame, since any objects that extend beyond the page will be cropped when the animation is exported (although you'll still see them in the Preview window).

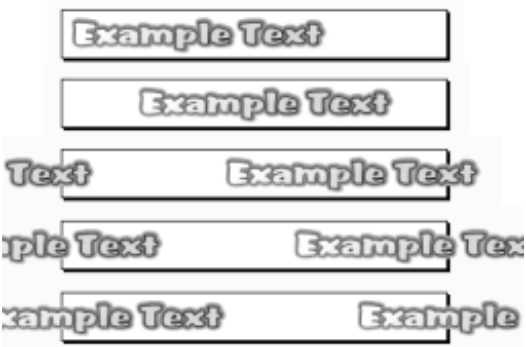
This is one case where it's important to set the page to the correct proportions. (Size matters less, as you can always resize on export.)

Since non-drawn or blank space that's not used in any frame will be cropped out of the exported image, make sure at least one of the bubble objects touches each page edge at some point. This will preserve the frame proportions you've set (see left, below.)

To make bubbles appear to float out of the top of the frame, simply move them so they overlap the upper page edge. The result, when cropped on export, will be as shown on the right.

You can use this **overframing** technique to bring objects in or out of the frame in any direction. The object makes a more convincing entrance (or exit) if it's shown as a partial object at the point of transition in (or out) of the frame.

For example, the "Neon 02" in Text Effects animation category of the Design Wizards (on the *DrawPlus 5.0 Design CD*) uses five frames with two text objects to produce a marquee effect. The two objects are jogged further to the right in each frame. In the output animation, we don't see the letters outside the frame. The text simply appears from the left, marches across, and disappears on the right.



# Imagine...

What's next is entirely up to you. With DrawPlus 5.0 the learning and inventing never has to stop. So explore, experiment, and most of all—have fun! To help spark your imagination, here are some additional ideas for your own animations...

## DrawPlus Samples

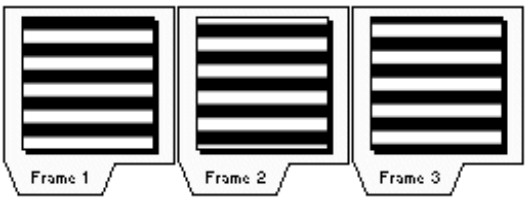
Take a few moments to explore the inspired animations in the Samples gallery (choose **View Samples** from the Startup Wizard menu). These are based on the sample drawings with the same names. We've already looked at the "Eye." Some of our other favorites are:

- **Blow Bulb:** An exploding light bulb, with fragments flying in all directions.
- **Figure:** An artist's mannequin attempts a *grand jeté*—with dire consequences.
- **Lamp:** A mesmeric '60's flashback.

## Perception effects

Grab a book on optical illusions, or explore the World Wide Web for perception demonstrations. Sometimes quite eye-catching effects are possible with very simple combinations of lines and shapes. The spiral we created earlier is a good example. Try these others:

- **The Waterfall Illusion:** A series of alternating stripes, moving in one direction through a frame, creates a convincing impression of motion. Use overframing with partial stripes on entering and exiting the frame, to accentuate the motion effect.

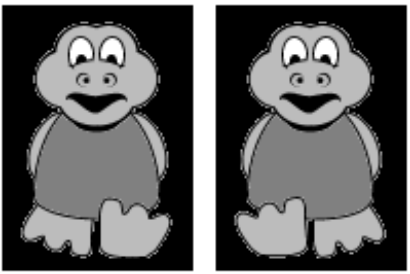



- **The Barber Pole Illusion:** A variation on the above, using diagonal stripes moving up or down, creates the effect of a rotating pole. Try using more of an S-shape to suggest a convex pole. Turned sideways, it

becomes a twisting screw or worm gear.

## Character animation

As we've noted, the art of character animation is somewhat beyond the scope of this chapter. But by using clipart and applying the basic principles, you can get amusing and effective cartoon-like results. For example, looping these two frames creates a "walking" motion:



Remember to apply the concepts of stretching and squashing, overlapping frames for smooth movement, arc motion, and timing. Here are some other tips to keep in mind:

- **Anticipation:** You can set up a major action with a minor "get ready, get set" action. For example, before a frog leaps up into the air, it could squat down a bit. Subtle preparatory gestures like this add interest without adding a lot of extra frames.
- **Backdrop:** Let background frames serve as a "stage" for your action. You can unlock and ungroup the Studio's Backdrop Wizards and use any of their parts in your own animations.
- **Exaggeration:** In cartoons, virtually anything goes. Wild facial expressions, elastic arm and hand movements, and so on—just as long as the basic timing works.
- **Simplification:** Don't overdraw—take your cue from established cartoon conventions. There's probably a good reason why our favorite cartoon animals all seem to have only three fingers and a thumb!

## Simulations

Realistic animations have a definite place in presentations and instructional materials. Whether you're demonstrating the beating of a heart, cog wheels turning, changes in a stock price, a route to follow on a map, or principles of basic physics, you can combine animated GIFs with HTML-based pages to deliver your informational message effectively.

- Consider using bitmaps as background frames and animating over them.
- Rather than trying to show too much or make too many points in one animation, break complex processes down into separate GIFs so each stage is conveyed clearly.
- Except for essential labels, place explanatory text and titles outside the animation to conserve file size.
- Scale file sizes to the delivery platform. If your HTML-based presentation will be played back from a hard disk rather than over a network or the World Wide Web (lucky you), you don't have to worry so much about slow page-load times.

## Web resources

Finally, take a look around at how animated GIFs are actually being used on Web pages, and explore the dozens of animated GIF archives available. With DrawPlus 5.0, your results can measure up to—or surpass—most of what's out there. Try emulating effects you like, and soon you'll have built up an archive of your own work!

# Image Slicing

With **image slicing**, a graphic is carved up into smaller graphics—each of which can have its own link, like any Web graphic—and DrawPlus saves the sections as separate files when you export the image. The process also outputs HTML tags describing a table containing the separate image files, so that a Web browser can reassemble them seamlessly. The result appears as a single larger graphic, but with different regions linked to different targets.

 The **Image Slice tool** lets you subdivide the page into separate sections which can be exported using the .GIF or .JPG format. For each rectangular slice object you draw, you can specify alternate text, URL links, and/or JavaScript rollover code. DrawPlus intelligently carves the page area into additional sections as needed, based on the slice objects you've specified.

Interactivity aside, image slicing can be a way of delivering a Web page more effectively. Say you've got a fairly large graphic that would take four or five seconds to load under standard conditions. Consider slicing it so that the image will assemble progressively on the page as each piece arrives. For the user, the page will seem to be loading faster.

## Slicing a navbar

Let's run through the steps involved in creating a simple navigation bar graphic with separate slice regions. By all means, try it yourself—we'll return to this example when we look at rollovers later in the chapter.

Start a new document in Drawing Mode and (since we're working for the screen) use the **Layout** tab of **Tools/Options...** to set the ruler units to pixels.

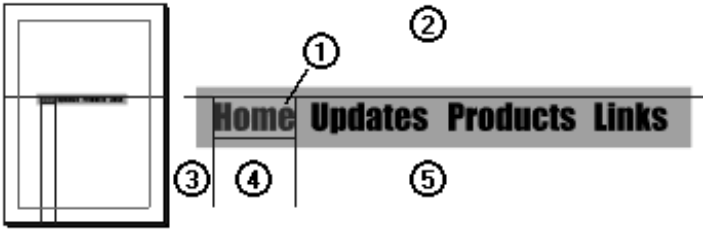
Working at 100% zoom, begin by drawing a long QuickBox and giving it a solid, middle-tone fill. This one is about 50 pixels by 400 pixels:

Now create a text object using the word "Home". Scale it to about 26pt, position it neatly over the left end of the background rectangle, and choose a suitable font and complementary fill color.


Duplicate the text object three times using **Ctrl**-drag. The cloned objects will have the same text and fill. Double-click each in turn and change their text to say "Updates", "Products", and "Links", then drag them into place as shown below. (Perhaps use **Arrange/Align Items...** to get them exactly in line.)


Save the drawing at this point.

Now let's proceed to create the image slices. Right-click the "Home" text object and choose **Insert Slice Object**. (If nothing changes on the screen, you need to click the **Show/Hide Web Objects** button on the HintLine toolbar to turn on the display.) With Web objects displayed, your entire page—and the navbar, viewed close-up—will look something like this (without the numbers):




The blue-shaded rectangle (1) fitted to the “Home” text object is called a **slice object**, and it’s a special object that can be given text, link or rollover properties. The other rectangles (2 to 5) are subdivisions created automatically by DrawPlus covering the remaining page area. When the drawing is exported as a GIF or JPG (with the image slice export option turned on), each of these rectangles will become a separate image. Don’t worry: although the rectangles extend over the whole page, you can opt to export only selected s selected region—for example, just the navbar—and DrawPlus will trim the slice regions as needed.

 The right-click technique is convenient for creating slice objects that conform to one or more selected objects, but you can also use the **Image Slice tool** on the Drawing toolbar to draw slice objects over any rectangular area within the page.

Choose the tool now and use it like any drawing tool to drag out a rectangle around the second text object, “Updates.” Immediately, a new blue-shaded slice object appears, and the page subdivisions update accordingly.


Go ahead and create slice objects for the third and fourth text objects, using either method. When you’re done, your navbar will look like this:


If necessary, you can use the Pointer tool to move or resize slice objects. They always retain a rectangular shape, and DrawPlus automatically updates the page subdivisions. Note that slice objects aren’t grouped or linked to other page objects. It’s generally a good idea to hide them when you’re not actually editing them, to avoid accidental changes.

Now, how about making these slice objects interactive? Simply double-click one (or right-click and choose **Properties...**). In the "URL Details" section of the dialog, you can enter a **URL** (Web address) as the object's hyperlink target and/or **alternate text** to be displayed as the graphic loads. Don't overlook alternate text: it signals the attention to detail that can help to differentiate run-of-the-mill sites from well-designed ones.


For now, don't enter anything in the "Rollover Details" section of the dialog. We'll continue this tutorial by adding rollovers in a later section, so save your work ready for later.

## Previewing and exporting image slices

Previewing a Web graphic in your browser is a quick way of checking it prior to export—in fact, DrawPlus just exports a *temporary* version and loads it directly into the browser.

Whether you're previewing or doing a final export, first choose **Export...** from the File menu and use the Export Optimizer to adjust the export settings such as the number of colors and palette. The .GIF or .JPG formats are typically used for web graphics, select the one you prefer, and make sure the **Image Slices** box on the Settings tab is checked. To output just part of your drawing, select the object(s) on the page and check the dialog's "Selected Region" option.

If you are adjusting the GIF settings to be used for previewing in your browser, rather than actually exprting, select **Close** on the export optimizer to save your settings. For details on settings, see the "Optimizing Graphics" section later in this chapter.

To preview the graphic, choose **Preview in Browser** from the File menu, Preview in Browser always exports the images in the GIF format. If the results are not as expected, use the Export Optimizer to adjust the GIF settings. In the browser, you can double-check the URL and text strings for accuracy, then make any necessary changes in DrawPlus. If you plan to use the preview function more than once, leave your browser open and DrawPlus will go straight to it next time.

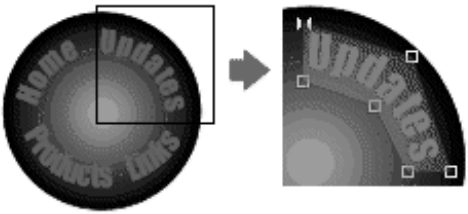
Whether it's a preview or a final export, the output for a sliced graphic will consist of a series of image files (for example, MYFILE_01.GIF, MYFILE_02.GIF, etc.) and a single HTML file (for example, MYFILE.HTML). The HTML file contains the tags for the slice object(s), ready to be pasted into the source code for the Web page. Use meaningful file names and/or consider creating a separate folder to keep sets of multiple files together.

# Image Maps

Whereas image slicing (see the previous section) 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. Hotspots aren't attached to a particular image, but become part of a larger "map" that gets exported along with an image in the form of HTML code. It's then up to the Web developer to embed the image map code properly into the Web page.

Whereas image slicing can be used simply to subdivide a large graphic into smaller regions for more efficient page loading, the only reason to use hotspots is to create "hot" (hyperlinked) regions with a URL target and/or alternate text. (DrawPlus hotspots don't include JavaScript rollover capability.)

Why use image map hotspots instead of slices? Use hotspots if you want to define isolated and/or irregularly shaped, clickable regions on a single Web graphic, as opposed to subdividing the entire graphic into rectangular image slices. For example:




At the right you see a detail of one quadrant of the graphic, showing a hotspot that's been custom-shaped to fit the underlying text. Hotspots are especially useful on photographic images.

 The **Image Map Tools** flyout on the Drawing toolbar displays three tools (**Rectangle**, **Circle**, and **Polygon**) for creating and editing image maps. Generally you draw the hotspots first, then go back to edit their shape and add Web properties. Simply select the right tool for the job and draw your hotspot. (To draw a polygon, drag and release the mouse button to define each line segment; double-click to close the polygon.) The hotspot appears as a pink-shaded region.

Hotspots can be moved, resized, rotated, or reshaped using the Pointer, Rotate, or Node tools. You may need to click twice (and watch the HintLine) to be sure you've selected the hotspot and not another object in the same spot.

 You may need to click the **Show/Hide Web Objects** button in order to view hotspots at times when you *don't* have an Image Map tool selected. Click again to hide the Web objects for more convenient editing of the underlying page objects.

As with image slices, you specify each hotspot's hyperlink target (URL) and alternate text by double-clicking it (or right-clicking and choosing **Properties...**), then entering the information in the dialog.

To preview the graphic in your Web browser or do a final export, follow the steps described above for image slices. First, make sure that the **Image Maps** box on the Settings of the Export Optimizer is checked. The output will consist of one image file (for example, MYFILE.JPG) and one HTML file (for example, MYFILE.HTML). The HTML file contains the image map description, ready to be pasted into the source code for the Web page.

# JavaScript Rollovers

Even if you don't have a clue what "JavaScript Rollovers" are, you've probably seen them in action. You've pointed your mouse at a graphic (such as a navigation bar button) on a Web page, and seen it instantly change color or become a different picture. That's what JavaScript rollovers can accomplish.

The term **rollover** refers to an interaction between a mouse and a screen graphic. When you point to a Web page graphic, your mouse pointer physically enters the screen region occupied by the graphic. This triggers an **event** called a “mouseover” and, if the underlying code is there to “trap” this event, it can trigger some other event—such as displaying another graphic at the same location. In other words, the **state** of the graphic changes in response to screen events.

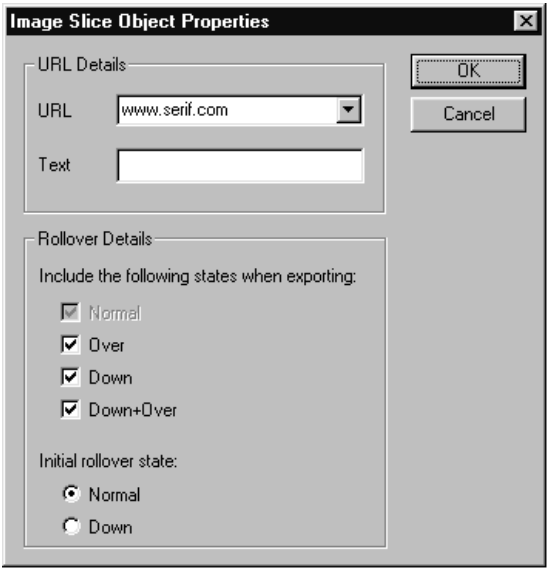
DrawPlus gives you the option of adding rollover responses to image slice objects. The necessary JavaScript code is generated automatically. There are four basic steps:

1. Divide the image into slice objects, as explained earlier in this chapter.
2. Specify which rollover states you want to activate for each slice object by checking boxes in each object’s Properties dialog.
3. Create the alternate graphics for each state. (It will help to understand the basics of DrawPlus layers, as covered in Chapter 8.)
4. Preview in a browser, revise as needed, then export.

## Adding rollovers

Let’s pick up where we left off with the navigation bar graphic we sliced up just a few pages ago. Each of the four menu items has a slice object overlaid on it, and DrawPlus has carved the rest of the page into neutral subdivisions. At this point we can think of the slice objects as buttons, and let’s say we want to have these buttons highlight—change color individually—when the person viewing the Web page mouses over them.


With the Pointer tool, double-click the “Home” slice object. In the “Rollover Details” section of the dialog, note the checkboxes for **Over**, **Down**, and **Down+Over**. These will tell DrawPlus which mouse events the graphic should respond to. Here’s a summary of how they work:




- **Normal** is the standard state of the graphic before any rollover, and is always included in the export.
- **Over** is the state triggered by a mouseover— when the mouse pointer is directly over the graphic. For example, a button's text might change color, or an outline appear, to show the button is "alive." Prior to a mouse click (see Down), moving the pointer in and out of the graphic's area will alternate between Over and Normal.
- **Down** is triggered by a mouse click on the graphic. The term derives from a typical button's behavior: its "up" state changes to "down" once it's been clicked. On a Web page, this click will normally activate the graphic's hyperlink and take the user to a different page.
- **Down+Over** implies a mouseover that occurs when the graphic is already Down, i.e. after it's been clicked. If this box is left unchecked, then the Over graphic appears by default when a mouseover occurs, even after a click. If checked, then the Down+Over graphic you provide (typically the same as the Down graphic) appears on a mouseover. Use Down+Over to ensure that the button stays in its "clicked" state and doesn't switch back to "Over" if the user happens to mouse over it again before leaving the page.

The **Initial Rollover State** buttons let you specify whether the graphic should first appear in its Normal or down state. For example, common sense dictates that on the site's actual Home page you should show the "Home" button itself as down, and unresponsive to mouse actions—after all, the viewer is already on that page—whereas buttons that link to other pages should be in their normal "up" state and responsive. (To make a graphic or image slice unresponsive, just don't assign a URL to it.) When a group of image slice objects is exported together, a mouseover or click on any one button will reset all the other buttons to their initial state.

So, back to our example... To have the button respond to a mouseover action, check the **Over** box, then click **OK**. This initial call for a rollover state triggers a change in your document's layer structure. Your drawing will look the same, but notice that at the bottom left hand corner there are now four tabs where there used to be one.


What was a single-layer document now consists of four layers, each relating to one rollover state. The original "Layer 1" has become the "Normal" state layer, and shows (you guessed it) what the graphic will look like in its normal state. Three additional layers have been added, one for each possible rollover state.

Now that the rollover layers are in place, right-click each of the other "buttons" (slice objects) in turn and check their **Over** boxes as well. The Rollover Details choices, which you can change right up to export time, tell DrawPlus which JavaScript code to generate and which graphic states to export.

Since for this exercise we just want the buttons to change color when moused over, say from black to yellow, all that remains is to place the variant yellow graphics onto the Over layer. The easiest way to do this is to copy the Normal layer objects to the Over layer and apply the color change there.

 Switch to the Pointer tool and click the **Show/Hide Web Objects** button if necessary so that the slice objects are hidden; you wouldn't want to copy them accidentally. Select the entire navbar, including the rectangle and four text objects, then copy it. Now click the **Over** tab button and paste. A copy of the navbar appears at the same screen location as the original, as you can see by toggling back and forth between the Over and Normal layers.

Changing the color is easy—you can do all four buttons at once! Drag a marquee around the four text objects, and click a nice highlight color (like yellow) on the Color tab. That's all there is to it.

Before finally exporting the graphic, it's a good idea to preview the rollover behavior in your Web browser. Follow the advice given earlier for "Previewing and exporting image slices," choosing your export settings first and ensuring that the **Image Slices** box on the Settings tab is checked.

At this point, you may wish to experiment with the "Down" and "Down+Over" rollover states. All you need to do is check the box for each state to be included, and paste the variant graphics for that state on the appropriate layer.

When you're happy with the results, go ahead and choose **Export...** from the File menu. The output will consist of a series of image files (for example, MYFILE_01.GIF, MYFILE_02.GIF, etc.) with variants for each rollover state, and a single HTML file (for example, MYFILE.HTML). The HTML file includes the JavaScript code for the slice object(s)—including the rollover event trapping—ready to be pasted into the source code for the Web page.

This section has certainly covered enough to get you started with rollovers. Online help (search "rollovers" in the Index) includes some additional pointers—for example, how rollover layers differ somewhat from standard layers, and how to create a document that uses one or more additional standard layers as a background for your rollover states.

# Optimizing Graphics

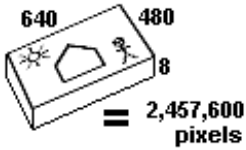
Whether you're producing pictures for the Web or the printed page, in order to use a DrawPlus drawing in another program you'll need to **export** it to one of the many standard graphics formats DrawPlus supports. Especially if you're exporting Web bitmap images, you'll want to read the following sections and take advantage of the Export Optimizer, which will greatly help you in reducing file sizes as far as possible while maintaining image quality.

In Chapter 6's brief discussion of picture formats, we mentioned the difference between **draw** or **vector** graphics, like those created by DrawPlus, and **bitmap**images (including .BMPs, .GIFs, and .JPGs), also known as **paint** or **raster** images. Whereas draw graphics are resolution-independent and use commands such as "draw a line from A to B," bitmaps are built from a matrix of dots ("pixels"), rather like the squares on a sheet of graph paper.

## Bitmaps

In order to grasp what "optimization"—the aforementioned tradeoff between file size and image quality—is all about, it's useful to understand a few things about bitmaps.

A bitmap is basically a bunch (well, technically a “map”) of numbers that tell each 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 bitmap 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.

On the Web, even with faster network connections and higher bandwidth, every pixel matters. Do the math... At 8 bits per byte, a home user’s 56K bit-per-second modem can optimally download around 7K bytes per second (a 28K modem, half that). How long do *you* want the user to have to wait for your whole page to load? If ten seconds seems long enough, then don’t go squeezing more than 70K bytes’ worth of content onto your page.

The trick is how to compress compelling graphics into such a small file size. Fortunately, computer scientists have been working on compression schemes for some time, and at least hundreds of picture formats have been created, with more on the way. A dozen or so are currently in widespread use among graphics professionals. For the Web, several formats have emerged as standards—and the following descriptions, along with details on Export Optimizer options, will help you make informed choices at export time.

**Note:** DrawPlus is essentially a draw program, but derives much of its power from its ability to handle effects like transparency and bitmap fills. Unlike the bitmap formats discussed here, vector-based formats like Windows Metafile (.WMF) simply don’t support these added effects. So, if you must export to a vector format, be prepared to work within tighter constraints. And as a rule when exporting to any unfamiliar format, it’s wise to test the export function early on—better safe than sorry!

## Web file formats

Three of the principal file formats used for Web pictures and animation are .GIF, .JPG, and .PNG.

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. Blurred shadows, anti-aliased edges, and subtle transparency effects, however, don't survive so well. 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.

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.

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 (see the earlier part of this chapter).

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 onscreen illustrations or photographic images. For "black and white" (really 256-level, 8-bit grayscale) photos, it has no particular advantages over .GIF.

When exporting as a JPG, you can use a slider 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.

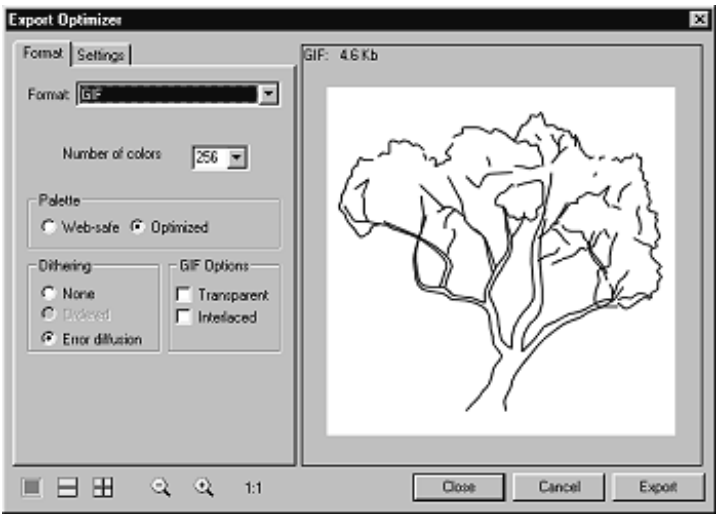
When choosing a quality setting for .JPG export, keep in mind the number of times you expect to be re-exporting a particular image. A photograph may look fine in the Export Optimizer the first time you export it at .JPG level 6, but after several such saves, you'll really see a cumulative quality loss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

For Web graphics, the relatively new **.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.

.PNG’s most obvious drawback at the present time is that the major Web browsers don’t yet provide full .PNG support—but this will change, we hope, as more graphic artists become aware of the format’s advantages.

## Using the Export Optimizer

The Export Optimizer appears when you choose **Export** from the File menu. It consists of a left-hand options region and a right-hand preview display, with additional buttons along the bottom of the dialog. Two tabs appear in Drawing Mode, and a third for animation export (as discussed earlier in the chapter).




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 on the bottom row.

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 Single 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 choose an export format from the list and specific options for the format, as discussed in detail below. 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!

On the **Settings** tab, you can scale the image to a new size if desired, or adjust the dpi (dots per inch) setting. For graphics to be used onscreen, it's best to leave these values intact.

When you've decided on the optimum export settings, click the dialog's **Export** button to proceed with the actual exporting. If you click **Close**, DrawPlus remembers your preferred format and settings, particularly useful for adjusting the GIF setting which are used if you preview the image in a browser (using **File/Preview in Browser**).

To optimize your use of the Export Optimizer, so to speak, here's a rundown of the terminology used on the Format tab and some suggested guidelines:

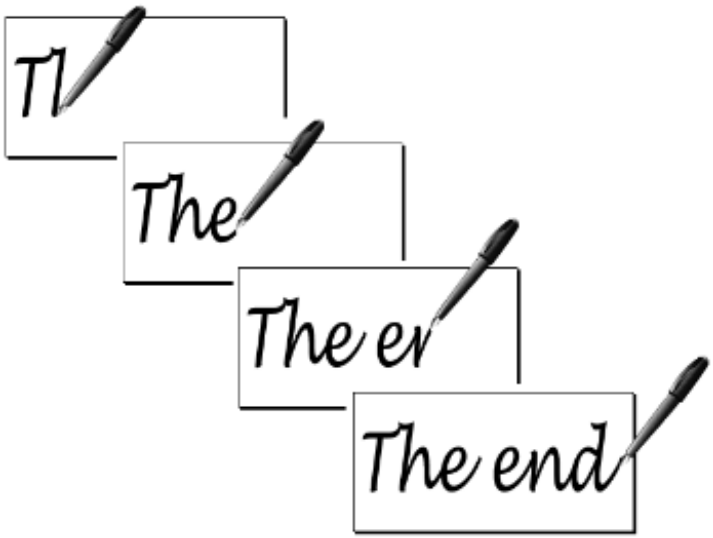
- **Bit Depth:** Bit depth (as discussed in the preceding section) relates to the number of colors in the exported image. In general, images with higher bit depth take up more disk space. Choose the bit depth that corresponds to the number of colors in the exported image. **8-bit** (256 colors) is the 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.

- **Palette:** A color palette is a table of color values that gets stored with any image having 8 bits (256 colors) or less. If you're exporting at 8 bits (256 colors) or less:
  ▪ The default **Optimized** setting lets the DrawPlus export filter determine the best colors to apply. This generally results in smooth color gradations and quite acceptable appearance when viewed on a High Color (16-bit) or better color display.
  ▪ Choose **Web-safe** to reduce the colors to only those found in the 216-color palette used by Web browsers on limited-color systems. This will ensure that an image you place on a Web page won't change its appearance when viewed on such systems.

- **Dithering:** Dithering comes into play with images being reduced to 8 bits (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.
  - While dithering can degrade solid-color areas, with shadows or transparency effects it's usually more important to preserve subtle gradations of color. Choose **Ordered** for a more regular dot pattern, or **Error diffusion** which tends to average away the patterns adaptively for a more natural result.
  - To minimize file size, or if you happen to have an image with few colors, you can 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.

- **GIF Options:** .GIF files support transparency—one reason they're commonly used over backgrounds on Web pages. DrawPlus gives you the option of exporting GIFs with or without a transparent background. Check **Transparent** to turn non-drawn regions of your graphic into transparent regions in the GIF. All other regions will become opaque. If unchecked, non-drawn 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.

- **Compression:** Compression schemes, which apply different algorithms to encode the image information with fewer total bits and bytes, are used in many formats. Depending on the format, DrawPlus may include a choice of compression scheme. In general, use the default setting unless you know for a fact that some other scheme is called for.
  With the .JPG format, recommended for photographic backgrounds, 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.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