

Table of Contents

Introduction: What is PhotoMorph?

Getting Started with PhotoMorph

Chapter 1: Standard Operations

Chapter 2: Image Preparation

Chapter 3: The Tools Menu

Chapter 4: The Morph/Warp Editor

Chapter 5: The Colorize Editor

Chapter 6: The Distortion Editor

Chapter 7: The Overlay Editor

Chapter 8: The Transition Editor

Chapter 9: Advanced Topics

Chapter 10: More About PhotoMorph

Troubleshooting

Questions

Introduction: What is PhotoMorph?

PhotoMorph is Windows software you can use in your own home to create the same special effects used in Hollywood movies and TV commercials.

PhotoMorph is powerful enough to meet the needs of professionals but easy enough to have you making your own morph movies in seconds. The interface is straightforward, and help is available at all times with a simple point of the mouse. Full-scale online help through the Windows-based Help facility is also available.

PhotoMorph features include:

- ◆ Morphing, warping, distortion, and transition effects
- ◆ Blue Screening, Chroma Key, Alpha Channel
- ◆ 256,000 Transition Combinations
- ◆ Colorizing and Titling of Video Clips
- ◆ Storyboarding and chaining of multiple clips
- ◆ An AutoPlay feature for constructing multi-animation presentations
- ◆ A complete Image Editing facility for cropping, rotating, scaling, and titling.
- ◆ Importing of 15 popular picture formats, including AVI, PCX, GIF, Targa, TIFF, BMP, JPEG, OS/2 BMP, Macintosh PICT and Amiga IFF
- ◆ Output to Microsoft's Video for Windows AVI format, Autodesk's FLC Flick format, or individual 24-bit frames
- ◆ **Video for Windows Runtime** is included in the package, allowing you to distribute your movies as AVI animations

Getting Started with PhotoMorph

This section takes you through installation and gives you an overview of making movies. Important image conversion features are outlined.

Requirements

To install **PhotoMorph**, you must have:

- ◆ An IBM PC compatible 386SX or better
- ◆ Microsoft Windows 3.1
- ◆ 4 megabytes free on your hard disk
- ◆ 4 megabytes of RAM
- ◆ VGA display
- ◆ A mouse or equivalent pointing device

Installation Procedure

Installing **PhotoMorph** is quick and easy. PhotoMorph and Video For Windows Runtime are both included on your installation disks..

***** PLEASE NOTE!! For *PhotoMorph* to run, you must have installed either:**

- ◆ **Microsoft Video for Windows**
- ◆ **The runtime version of Video for Windows which is included in this package** (installation procedure follows)

To install PhotoMorph:

First of all:

MAKE A BACKUP COPY OF THE PHOTOMORPH DISKS!!

Done? OK, now we can start...

1. Insert your backup copy of the **PhotoMorph** program disk into your floppy disk drive.
2. To begin installation from the **Program Manager**:
 - ◆ Go to the **File** Menu and choose Run...
 - ◆ A box entitled "Run" will appear. In the Command: edit box, type:

`<source-drive>:\setup`

... where <source-drive> is the appropriate floppy disk drive (A or B). For example, if the **PhotoMorph** program disk is in drive A, type:

`a:\setup`

- ◆ Click OK.

To begin installation from the **File Manager**:

- ◆ Double-click on the appropriate floppy disk icon (A or B). A window will open which will show the A or B disk.
 - ◆ Double-click on the folder icon.
 - ◆ Double-click on the file "SETUP.EXE"
3. After the Setup program has started running, follow the installation instructions. You will be asked for a directory into which you want **PhotoMorph** to be installed. The default directory is **c:\pmorph**.
 4. After PhotoMorph has been installed you will be asked about installing Video for Windows Run-Time.
 5. If the destination drive you specified in step 3 has insufficient space for installation, a message box will appear: "Insufficient disk space on specified destination drive." Click OK, and the "PhotoMorph Installation" box will reappear. You may specify a new destination drive and try again.
 6. If the installation is successful, a new group will appear in your Program Manager. The new group will be open and will include the **PhotoMorph** program icon.

Quick Tour - Create Movies

Here are a couple of quick run-throughs to get you up and making movies immediately.

Create and Display a Morph Movie

1. Open **PhotoMorph**. The Project Editor will be open on your screen.



2. Click on the *Load Project* icon.



3. Select a **PhotoMorph** project from the Load dialog box (any file with the extension .PMP).
4. Click on the *Create Animation* button of the Project Editor, which by default creates a file with the extension .AVI. Name the file and let the animation render.



5. Click on the *AVI Player* icon in the Project Editor tool bar.

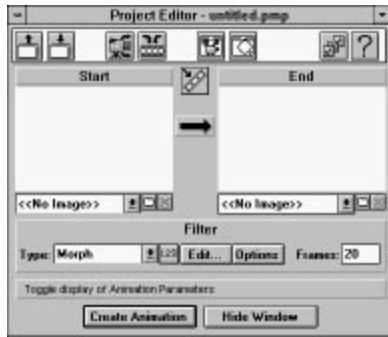


6. Load the .AVI file you just created by clicking on its name in the file list.
7. Click on the **Play** button!



Create a PhotoMorph Project and Movie

1. Open **PhotoMorph**. The Project Editor will be open on your screen.



2. Load the file **SMLCAR2.JPG** into the **Start Image** window.

- ◆ Go to the *Load Image* icon below the **Start Image** window and click on it.



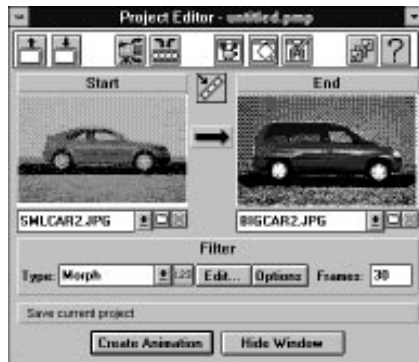
- ◆ Choose **SMLCAR2.JPG** from the file list.

3. Load **BIGCAR2.JPG** into the **End Image** window.

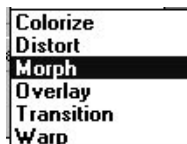
- ◆ Go to the *Load Image* icon below the **End Image** window and click on it.



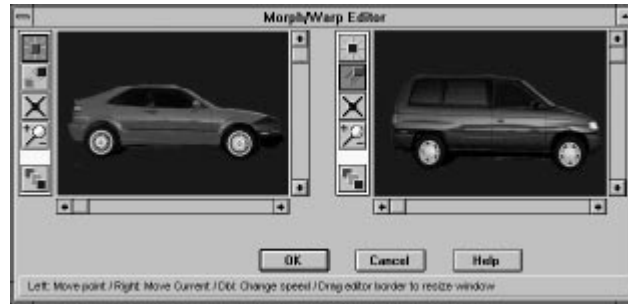
- ◆ Choose **BIGCAR2.JPG** from the file list.



4. The Project Editor should now appear as pictured above. Note that the **Morph** filter is chosen as the default filter in the *Filter Type* list box.



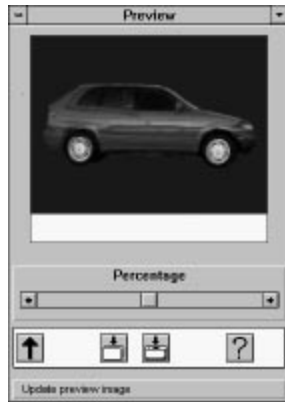
5. Click on the **Edit...** button or on the right arrow between the image windows. This opens the Morph Filter Editor, as pictured.



6. Place points on the **Start** and **End** images.
- ◆ Point to a spot on the bottom of the rear bumper of the car in the Start image. Click with the left mouse button. A point appears on the image, and a corresponding point appears on the End image.
 - ◆ Now move the cursor over to the End image and position it over the active (red) point you just placed. Click and drag the point to the bottom of the rear bumper of the End car.
 - ◆ Place points in a similar manner in the following locations:
 - ◆ Center of rear tire
 - ◆ Center of front tire
 - ◆ Bottom of front bumper
 - ◆ Top of front bumper
 - ◆ Front of hood
 - ◆ Bottom of windshield
 - ◆ Top of windshield
 - ◆ Top of back of car
 - ◆ Top of rear bumper
8. When you've placed all your point pairs, the images should appear as pictured. Click OK.
9. Now click on the Preview Window icon in the Project Editor tool bar.



The Preview Window appears. Use the slider to look through your animation's frames.



10. If you want to save the project so you can go back to it and work on it further, click on the *Save Project* icon in the Project Editor tool bar.



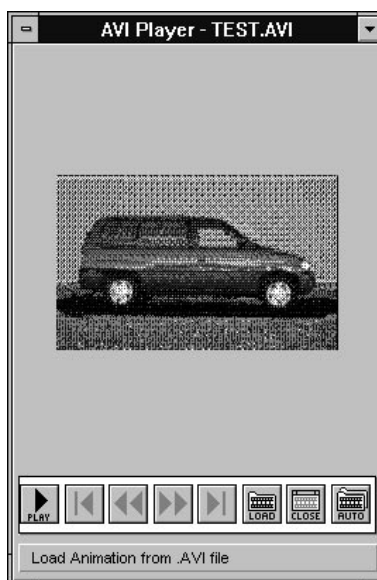
11. Click on the *Create Animation* button of the Project Editor, which by default creates an animation file with the extension .AVI. Name the file.



12. Click on the *AVI Player* icon in the Project Editor tool bar.



13. Load the AVI file you just created.



14. Click the **Play** button

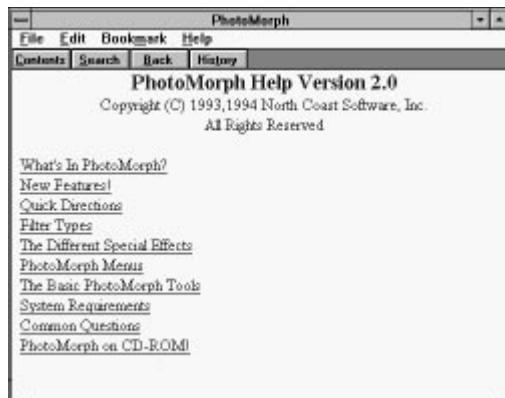


Using Important Image Features

Help! Online and Context-Sensitive

Online Help

Online help is useful for getting quick hints and information on **PhotoMorph** menu items and operations.



PHOTOMORPH ONLINE HELP DIALOG BOX

To access online help, simply click on the **Help** menu heading in the title bar. Choose *Index* to locate a particular topic you're interested in. Print a help section with the *File* option. Use the *Edit* option if you want to copy a help section to the Clipboard. Click on *Browse* and use the sub-options for a reading tour.

If you need more information about using the Help facility, click on *Using Help*. This option will give you basic information on how to get online help.

Context-Sensitive Help

You can choose to display context-sensitive help, which will give you information about whatever menu item or option is currently active. Context-sensitive help is displayed in the "System/Help" status bar at the bottom of the **PhotoMorph** window. To activate context-sensitive help, you must go the **File** menu and choose Settings. Go to the *Status Bars* group, and choose one of these two options: *Show Both Status Bars* OR *System/Help Status Bar*.

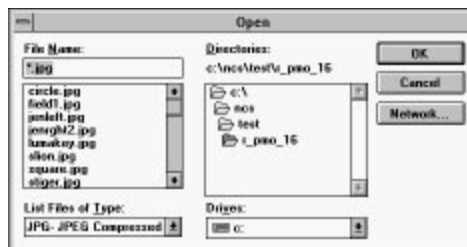
LOCAL AND SYSTEM/HELP STATUS BARS

For an example of context-sensitive help, open an image using the **File** menu's Image/Open option. Click on the **Edit** menu. Click and *hold down* the left mouse button on the Copy option. Context-sensitive help will display a short message about what the Copy option does: "Copy image in active window and place in Clipboard."

Opening Image Files

Opening an image file reads in an image from your disk and displays it.

Go to the **File** menu and choose Image/Open. A dialog box will appear. The current drive and directory is displayed above the middle box at the bottom (the directories list box).



THE OPEN IMAGE DIALOG BOX

To change directories or drives, double-click with the left mouse button on the drive or directory name in the directories list box. Use the directories list box to move to your PMORPH directory.

To see a list of available file formats, click on the down-arrow button next to the file formats list. Scroll the list by clicking on the up and down scroll arrows. Click on the file format **PCX - PC Paintbrush Format**. **PhotoMorph** will display all of the files in the current directory that are in the PCX format. If you want to see a list of *all* files in the directory, go to the top of the file formats list and choose *** - List all files**.

You may also type information into the *Filename:* box at the top of the Open dialog box. For example, type ***.pcx** in the *Filename:* edit box and hit the Enter key. As above, all PCX files will appear in the file list.

To open a file, double-click on its name in the file list at bottom left. You may also type the file's name into the *Filename:* edit box (for example, typing **F:\EXAMPLE\IMAGE.TIF** in the *Filename:* box, then hitting the Enter key would load that particular file). Try opening some of the sample images that are provided with your copy of **PhotoMorph**. They can be found in the PMORPH directory.

Converting, Compressing, and Saving Images

Save As...

After loading an image, you can use Image/Save As... in the **File** menu to convert the image to another format and to save it in compressed or decompressed form.

Load (open) the file COLORS1.TGA from your PMORPH directory. Now choose Image/Save As... from the **File** menu. A dialog box will appear.



THE SAVE AS... DIALOG BOX

If you wish to save the image to a new drive or directory, move to the new one by double-clicking with the mouse in the directories list box. Choose a new file format for the image by clicking on the new format's name in the formats list box (use the down-arrow and the scroll bars to browse through the formats list box). Try choosing the format *TIF - Tagged Image File Format* from the formats list box. Note that the output filename in the *Filename:* edit box has been changed to COLORS1.TIF. You can use this edit box to change the output filename if you wish.

Instead of using the mouse to make changes, you may change the output filename and format by simply typing the new name in the *Filename:* edit box. For example, to change the file COLORS1.TGA to a PCX file, type `colors1.pcx` in the *Filename:* box.

You can also change the file's compression state when saving. Click on the *Format>>* button. Choose the *Compressed* radio button at the bottom to save your file in a compressed form. De-select the radio button to save the file in an uncompressed form.

Note: There are some formats that cannot have their compression state changed by the user. For these formats, the *Compressed* radio button will be grayed out (disabled). For more information on compression states of specific formats, see the section in Chapter 10, **Import/Export File Formats**.

To save the file with your chosen parameters, click on the Save button. To cancel saving and exit the Save As... dialog box, click on the Cancel button.

Color Reduction and Optimization

PhotoMorph has sophisticated options for changing the color configuration of your images. There are two different ways to change color formats:

- ◆ Use the main **Colors** menu or the pop-up **Colors** menu.

- ◆ Use the Image/Save As... option in the **File** menu.

With both of these methods, you may choose between two color reduction algorithms, Flat Cut and Optimized Cut, and you may choose whether or not to dither the image when reducing colors.

The Colors Menu

Using this menu, you may quickly choose a color configuration for your current image. The current configuration will be indicated in the menu with a check-mark.



Open the sample file, COLORS1.TGA. Now open the **Colors** menu and note that *24-Bit Color* is checked. Click on another color configuration; for example, *16 Colors*. Now you may choose between Flat Cut, Optimized Cut, Flat Cut with Dither, and Optimized Cut with Dither. Try choosing one of these options, then use the Undo option under the **Edit** menu to get the original image back. Then choose another method, then Undo, etc. This will give you an idea of the results each of the four methods will give you.

You can also try choosing Gray at the top of the **Colors** list to convert the image to grayscale.

Pop-Up Colors Menu

A short-cut method of using the **Colors** menu: open an image, then point to the image with the mouse and hold down the left button. The **Colors** menu will appear as a pop-up. Choose your options in the same manner as above.

Save As...

In addition to being able to change filenames and compression states, the Save As... option in the **File** menu can change color configurations.



THE SAVE AS... DIALOG BOX

Open the file COLORS1.TGA. Choose Image/Save As... under the **File** menu. Click on the *Format>>* button. Note that *24-Bit Bitmap*, *Color*, and *Compressed* radio buttons are selected, showing the current configuration of the file. Note also that the *Monochrome Bitmap* and the *16-Color Bitmap* are grayed out (disabled). This is because those two color configurations are illegal for the current file format, Targa (in other words, Targa does not support them).

Now try going to the file formats list and choosing the TIF format. Notice that now all six color configurations are enabled, since the TIF format supports them all.

You should notice that if you use the Save As... dialog box to convert files, there is no way to specify the color reduction method (Flat Cut or Optimized Cut) or to select/de-select dithering. When a file is converted using Save As..., **PhotoMorph** uses the methods that are specified in the Settings dialog box under the **File** menu. To change the file saving settings for Save As..., go to Settings and find the *File Saving* group.

If you choose a color configuration with fewer colors than the original image (anything less than 24-bit color, in this case), **PhotoMorph** will use the *File Saving* specifications when saving the file. However, if you choose a configuration with *more* colors than the original image (i.e., *32-Bit Bitmap* in this case), **PhotoMorph** simply stores the image in that color format. No color information is discarded in this case.

Screen Capture

The **PhotoMorph** screen capture utility will no doubt prove very useful to you in creating screen images to use in animations.

The following sequence will capture an image of your entire screen and automatically paste it into a new **PhotoMorph** window.

Go to the **Capture** menu and choose Entire Screen. Now click on Set Options... in the **Capture** menu. In the *Capture* group, choose *To Window*. Click OK.



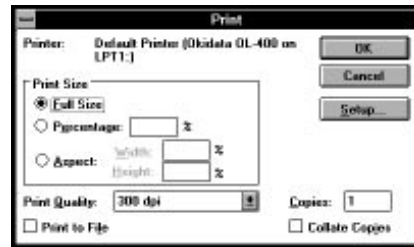
THE CAPTURE MENU OPTIONS DIALOG BOX

Now simply hit the F11 key. **PhotoMorph** captures an image of your screen, opens a new window, and pastes the image into it (all in one step!)

Please go to **The Capture Menu** section in Chapter 2 for explanations of all the **PhotoMorph** screen capture options.

Printing

To print an image, simply open an image file and choose Print from the **F**ile menu. You can use the Print dialog box to scale, set print quality, and set up the printer.



THE PRINT DIALOG BOX

PhotoMorph can print to any Windows-supported printing device.

Mistakes and Experiments: Undo

The Undo function under the **E**dit menu can be a lifesaver. It reverses the most recent operation performed on an image. Note that the Undo operation only applies to image windows, not to project windows!

Undo works on an image-by-image basis. In other words, if you have two images open, you can make a change to Image #1, then make a change to Image #2, then go back to Image #1, choose Undo, and get the original unchanged Image #1 back.

You can use Undo as a toggle between two versions of an image. Load an image, make a change, then use Undo to switch back to the original image. Use Undo again to see the change again, and so forth.

Undo is a great tool for trying out various operations on an image. Try loading an image and performing the different color reduction options on it (Flat Cut, Optimized Cut, and the same two with dither), using the **C**olors menu or the pop-up **C**olors menu.

Undo can also help you become familiar with the eight different dithering algorithms. You can change dithering algorithms by choosing Settings under the **F**ile menu, then going to the *Memory/Color Options* group and choosing from the *Dither:* list. Since there are no real guidelines for choosing a dithering algorithm, it will be useful to you to try them all out on various images to become familiar with how they work.

Chapter 1: Standard Operations

This chapter discusses standard Windows file operations provided by the **File** and **Edit** menus:

- ♦ Creating a new file
- ♦ Loading files
- ♦ Saving files
- ♦ Renaming files
- ♦ Printing files
- ♦ Editing files (cut, copy, paste)

It also covers standard operations modified to fit *PhotoMorph* users' specific needs:

- ♦ Creating a new animation project
- ♦ Loading animation projects
- ♦ Saving animation projects
- ♦ Renaming animation projects
- ♦ Setting up custom *PhotoMorph* operations

The File Menu

The **File** menu provides standard operations for managing images and project files:

- ♦ creating a new image window
- ♦ loading an existing image
- ♦ saving an image

- ♦ creating a new project
- ♦ loading an existing animation project
- ♦ saving an animation project

- ♦ printing images
- ♦ setting up the printer
- ♦ setting up custom *PhotoMorph* operations

Image

Click on Image. A pop-up menu appears.

New

Choose New to create an empty image window. This command is most useful for pasting in images from the clipboard.

Open

Choose Open to load an existing image from your disk.

To view a listing of the available file formats, click on the down-arrow button. Choose your desired file format from this list box by clicking on the name of the desired file format. If you click on the first option, *.* - *List all files*, **PhotoMorph** will list all files in the current directory.

Move among directories using the directory list box (double-click with the mouse to change directories or drives). The files in the specified format and directory will be displayed in the file list. Select your file by clicking on its name in the file list, then click OK.

Instead of using mouse clicks, you may choose your file by typing information into the Filename: edit box. For example:

- ◆ Type a file's name to load that particular file (e.g., *FOO.PCX*).
- ◆ Type an asterisk, a period, then the file format extension to see a list of all files in that format (e.g., **.PCX*).
- ◆ Type *.* to see a list of all files in the current directory.

Click OK when you have specified your file.

While the file loads, a loading status box will appear which gives you information on: filename, file format, file dimensions, palette, planes, color/gray, memory required, compression state, bits per pixel, type, version, and creator.

The number of images that can be loaded at once is limited by the memory required by the images and the amount of memory available to Windows at that time. If there is insufficient memory to load an image, **PhotoMorph** will post an "Insufficient Memory" message, and the image will not be loaded.

The "last loaded" file type is saved between sessions, and will be the default file type in the Open dialog box the next time you run **PhotoMorph**.

Shortcut: To quickly re-size a window to fit the image after loading, point to the window with the mouse and click with the right mouse button.

Shortcut: Images can be scrolled using the keyboard as well as the scroll bars. Use the "Page Up" and "Page Down" keys, and the right, left, up, and down arrow keys. Shift-Page-Up pages to the right, and Shift-Page-Down pages to the left.

Close

Use Close to close the active image window. This has the same effect as double-clicking with the mouse on the Control-menu box in the upper left-hand corner of the document window.

If you have not saved the current version of the image to a file, a message box will appear, asking you if you want to save the image in its current form. You may choose Yes or No, or Cancel the Close operation.

*Shortcut: If you wish to suppress the above-mentioned message box (i.e., if you just want to close the window **without** saving any changes), hold down the Shift key as you click on Close.*

Save

Use Save to save an image to a file. Click on Save to save the image and Cancel to cancel the Save operation.

If the image is untitled, the dialog box that appears will be the same as the Save As... dialog box, i.e., you may specify a filename, file format, number of colors, and compression state. (Please see the section below on the Save As... menu entry for important information about automatic color reduction and file compression).

If a message box appears indicating that there is insufficient space to save your image, you should either:

- ♦ Save the image to a different drive, or...
- ♦ Go to the File Manager and delete some files from the current drive to free some space.

Save As...

Use Save As... to change an image's filename, to save to a different directory, and to convert to a different file format. Use the Format>> options to change number of colors and compression state. Click on the Save button to save the image as specified in the Save As... dialog box. Click on the Cancel button to cancel the Save As... operation.



THE SAVE AS... DIALOG BOX

- ♦ Change the image's filename and/or file format by typing the new name and extension in the Filename: edit box. For example, if you wished to save the file FOO.TGA, a Targa file, as a PCX file called BAR, you could type BAR.PCX. This would change the filename and the file format in one step.
- ♦ Use the directory list box to move among drives and directories (double-click with the mouse to change directories or drives).
- ♦ To see the list of file formats that are available, click on the down-arrow button. Use the scroll bar buttons to look through the file formats list. Choose a new file format by clicking on the format's name in the list. If the first item in the file formats list is chosen (*. * - List all files), **PhotoMorph** will default to the image's original format when saving.

The "last saved" file type is stored between sessions, and will be the default file type in the Save As... dialog box the next time you run **PhotoMorph**.

The Format>> button

If you click on Format>>, you will be presented with a list of options for saving the image. You can use these options to:

- ♦ Set number of colors (Monochrome, 16-Color, 256-Color, 16-Bit, 24-Bit, or 32-Bit).
- ♦ Set the image to be *Color* or *Gray*.
- ♦ Turn file compression on or off.

** Please note that not all file formats support all options; those options that are illegal for the current file format will be grayed out (disabled). For example, the GIF file format does not support 24-bit color. Therefore, the *24-bit* color option will be grayed out if the GIF format is selected.

Important note on color reduction:

If the file formatting that you choose when saving your image requires it to undergo a color reduction, **PhotoMorph** will automatically use the default color reduction options that are specified in *File Saving* under Settings in the **File** menu. You will receive a warning from **PhotoMorph** if your image is about to undergo a color loss, which gives you a chance to cancel the operation before color information is actually lost (discarded). (If you wish, you may suppress this warning. Use *File Saving* under Settings in the **File** menu, and de-select the option *Warn user for color loss*.) There are two instances in which an automatic color reduction can occur:

1. You click on Format>> and then choose a number of colors that is smaller than the number of colors contained in the image.
2. You choose a file format from the file formats list which is incapable of saving the number of colors contained in the image. If this occurs, **PhotoMorph** will first try to save the image in a format with a *higher* number of colors. If it is successful, no warning will be issued since all color information would have been preserved. (The only change in this case would be that the image would have been saved in a format that can potentially encode *more* colors than are contained in the image.) If there is no higher-number color format to choose from, **PhotoMorph** would be forced to reduce the number of colors to the next-lowest number available.

Here are a couple of real-life examples of 2) above:

Example #1: You paste an image from the Clipboard which was taken from a Targa file. Targa images can contain as many as 16 million colors (24-bit color). You choose Save As... from the **File** menu. You choose the GIF format from the file formats list, then click Save. At this point, a color reduction *must* be performed (since GIF does not have a 24-bit color format). **PhotoMorph** will use the information in Settings to tell it which method of color reduction to use, whether to dither or not, and whether or not to display a warning that a color loss is about to occur.

Example #2: You load a 16-bit color image which is in the TIFF format. You choose Save As... from the **File** menu. You choose the DIB format from the file formats list, then click Save. DIB does not have a 16-bit color format, but it *does*

have a 24-bit color format. In this case, **PhotoMorph** will save the image as a 24-bit DIB. No warning will be issued since no color information was discarded.

** For information on modifying the default settings for automatic color reductions, see [Settings](#) below. For a discussion of color reduction and dithering, see Chapter 10.

Important Note on compressing files:

You'll notice that with certain file formats, the [Compressed](#) option is grayed out. There are actually four possibilities for file formats with regard to compression:

1. The format is always compressed (i.e., GIF). The [Compressed](#) option will be grayed out and selected for these formats.
2. The format cannot be compressed (i.e., BMP). The [Compressed](#) option will be grayed out and de-selected for these formats.
3. Some subformats cannot be compressed and others can be either compressed or uncompressed (i.e., 24-bit DIBs cannot be compressed, but 8-bit DIBs can be in either compression state). The [Compressed](#) option will be grayed out and de-selected for the subformats that cannot be compressed, and enabled for those that can be compressed or uncompressed.
4. The format can be compressed or uncompressed (i.e., TGA). The [Compressed](#) option will be enabled for these formats.

All you need to do to compress an image is to turn on the [Compressed](#) option under [Save As...](#) when you save the image. The image's specific file format dictates which compression algorithm **PhotoMorph** will use (with the exception of the TIFF file format).

For TIFF files *only*, you may change the default compression algorithm that **PhotoMorph** will use when saving the file in compressed form. A different algorithm can be specified for each color configuration (monochrome, 16 colors, 256 colors, 16-bit, and 24-bit/32-bit). Use [Settings](#) in the **File** menu to change the compression defaults for TIFF files. For more information on compression algorithms and how they affect you and your TIFF files, see Chapter 10.

Project

Choose [Project](#) and a pop-up-menu appears.

New

Choose [New](#) to open the [Project Editor](#) and begin a new animation project.

If you were already working on a project when you click on [File/Project/New](#), you will be prompted to save it before the new project is loaded.

Open

Choose Open to load an existing animation project from your disk. Animation projects have the extension .PMP.

Important: Project (.PMP) files keep pointers to the project's Start and End image files. If you move the Start and End image files to a different directory or drive, the project will not be able to find them and you will receive an error message. If you need to relocate images, open the project and then use the File/Image/Save As... function of PhotoMorph to rename the files.

(Remember that File/Project/Open can only open animation projects. If you want to open an image file, you need to choose File/Image/Open.)

Move among directories using the directory list box (double-click with the mouse to change directories or drives). The projects in the current directory will be displayed in the file list. Select your project by clicking on its name in the file list, then click OK.

Instead of using mouse clicks, you may load your project by typing its filename into the Filename: edit box.

Click OK to load your project.

When you load a project, **PhotoMorph** will first load its Start and End images. Loading status boxes will appear which give you information on the Start and End images: filename, format, file dimensions, palette, planes, color/gray, memory required, compression state, bits per pixel, type, version, and creator.

If for any reason **PhotoMorph** cannot load one of these images, a message box will appear with the error message "Cannot load image file." The load operation will abort. Note the image's filename in the title bar of the message box, rectify the problem, and load the project again.

The number of images that can be loaded at once is limited by the memory required by the images and the amount of memory available to Windows at that time. If there is insufficient memory to load an image, **PhotoMorph** will post an "Insufficient Memory" message, and the image will not be loaded.

Save

Choose Save to save your current project to disk. Click on the Save button to save the project and Cancel to cancel the operation.

If the project is untitled, you will be prompted to name it. Your animation projects filenames will have a .PMP extension.

If a message box appears indicating that there is insufficient space to save your project, you should either:

- ◆ Save the project to a different drive, or...
- ◆ Go to the File Manager and delete files from the current drive to free some space.

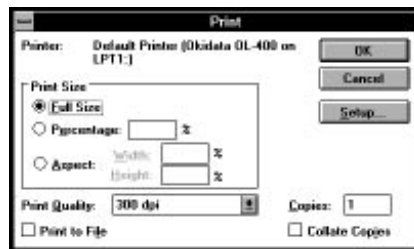
Save As...

Use Save As... to change a project's filename or to save to a different directory. Click on the Save button to save the project as specified in the dialog box. Click on the Cancel button to cancel the Save As... operation.

- ◆ Use the directory list box to move among drives and directories (double-click with the mouse to change directories or drives).
- ◆ Change the project's filename by typing the new name in the Filename: edit box.

Print

Use Print to print any loaded image to an attached printer or to a file. A dialog box will appear when you choose Print



THE PRINT DIALOG BOX

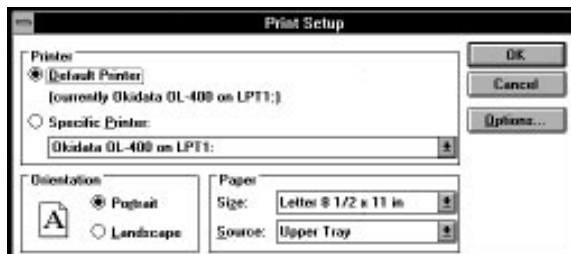
This allows you to change parameters such as:

- ◆ Size (use the Percentage option)
- ◆ Aspect Ratio
- ◆ Quality
- ◆ Number of Copies
- ◆ Destination (printer or file)

The Setup button lets you adjust printer settings.

Printer Setup

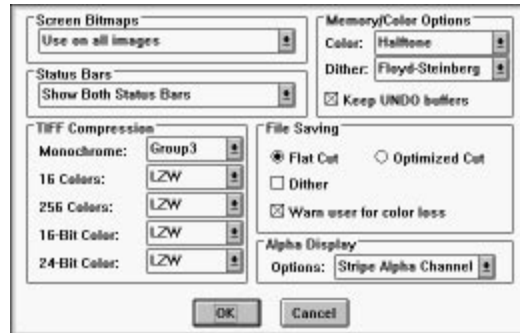
Adjust your printer's settings with Printer Setup. Available options will vary from printer to printer.



THE PRINTER SETUP DIALOG BOX

Settings

Use the Settings options to customize certain **PhotoMorph** conversion operations to suit your individual needs. These options affect speed and/or quality of the operations in question. You can set options affecting screen bitmap use, color matching methods, dithering methods, TIFF file compression, default color reduction operations during file saving, and alpha channel display options. The options you set will be saved from run to run of **PhotoMorph**.



THE FILE MENU SETTINGS DIALOG BOX

Screen Bitmaps

A screen bitmap is a device-specific copy of the image you are viewing. If you use screen bitmaps, you will substantially speed up all your screen updating. The cost of using screen bitmaps is extra memory, so if you are using mostly large or high-color images, you may wish to turn this option off to avoid using too much memory.

If you have screen bitmaps turned on but **PhotoMorph** cannot create a screen bitmap because memory is too low, a "Memory Getting Low" message will be posted. The screen bitmap will not be created, so updating of the image will be slower.

Use on all images

Choose this option, and **PhotoMorph** will use screen bitmaps on each image you load.

Don't use on 16-bit and 24-bit images

This option disables screen bitmaps for high-color images. The memory you save allows you to load a greater number of images, as well as larger files. Screen updates will be slower for 16-bit and 24-bit images.

Don't use on any image

Disable screen bitmaps with this option. You will conserve memory at the cost of slowing screen updates.

Status Bars

Use the Status Bars group to set up display of the Local and System/Help informational status bars. The System/Help bar's information includes valuable context-sensitive help messages. The bars are displayed at the bottom of your **PhotoMorph** window.

The **Local status bar** displays information about the currently-active image. This information includes:

- ◆ *Number of colors* (monochrome, 16 colors, 256 colors, 16-bit color, 24-bit color, or 32-bit color)
- ◆ *Image Size* (width x height)
- ◆ *File Format* (i.e., "BMP - Windows bitmap")
- ◆ *Compressed/Uncompressed*
- ◆ *Color/Gray*
- ◆ *Modified*

The **System/Help status bar** displays context-sensitive help and global information about the state of your system. This information includes:

- ◆ *Free memory*
- ◆ *Free system resources*
- ◆ *Free local resources*
- ◆ *Context-sensitive help messages*

There are four options for displaying these status bars:

- ◆ *No Status Bars*
- ◆ *System/Help Status Bar*
- ◆ *Local Status Bar*
- ◆ *Show Both Status Bars (the default setting)*

Note that you must choose either *Show Both Status Bars* or *System/Help Status Bar* in order to activate context-sensitive help. If you wish to suppress context-sensitive help, you must choose either *No Status Bars* or *Local Status Bar*.

TIFF Compression

This option allows you to set the default file compression algorithm to be used when saving TIFF files. You may choose a default compression algorithm for each possible color type: monochrome, 16 colors, 256 colors, 16-bit color, and 24-bit/32-bit color. The compression algorithms LZW and PackBits (RLE) are available for all color types. Group 3 (CCITT Fax 3) and Group 4 (CCITT Fax 4) are available only for monochrome TIFFs.

The default compression setting for all color types is LZW. For more detailed information on compression algorithms, see Chapter 10.

Memory/Color Options

Color

The Color: field can be used to specify how **PhotoMorph** should display higher-color images on lower-color devices. There are two options:

- ♦ *Best Match*
- ♦ *Halftone*

Best Match will attempt to match the image's original colors to the available system colors.

If you choose *Halftone*, the image will generally look better, but the display operation will take longer.

Dither

There are eight different dithering algorithms for you to choose from:

- ♦ *Halftone*
- ♦ *NCS Fast*
- ♦ *Floyd-Steinberg*
- ♦ *Stucki*
- ♦ *Burkes*
- ♦ *Sierra*
- ♦ *Jarvis, Judice, + Ninke*
- ♦ *Stevenson + Arce*

There are no hard-and-fast rules for choosing a dithering algorithm. The results will vary, depending on such variables as the image's number of colors and objects, the specific colors used in the image, and your intended final use of the image.

Keep UNDO Buffers

If you really need to conserve memory, you can de-select this option. Undo buffers will not be saved, thus some memory will be freed. **Be warned:** If you turn this option off, then the Undo operation of the **Edit** menu will *not* function!

The default setting for *Keep UNDO Buffers* is **ON**.

File Saving

Use this option to set defaults for the conversion operations that occur automatically when you convert and save a file to a format with fewer colors. You have the following options:

- ♦ Choose between Flat Cut and Optimized Cut color reduction
- ♦ Turn dithering on or off
- ♦ Send a warning (or not) if you are about to sustain a color loss when saving an image.

For more detailed information on color reduction and dithering, see Chapter 10.

Alpha Display Options

These options will determine how PhotoMorph displays a 32-bit Alpha Channel image. The default is Stripe Alpha Channel.

- ◆ No Alpha Channel - The transparent part of the image is displayed in black, the opaque part is displayed normally.
- ◆ Half Alpha Channel - The Transparent parts of the image are displayed at half-luminance. The opaque parts are displayed normally.
- ◆ Full Alpha Channel - The images is displayed as if it had no alpha channel.
- ◆ Stripe Alpha Channel - Stripes are displayed where the alpha channel is transparent, and no stripes where it is opaque

The Edit Menu

The **Edit** menu provides standard Windows editing operations for images loaded in **PhotoMorph**. These include the Cut, Copy, and Paste operations, which allow you to move images from one window or application to another. The **Edit** menu also includes the useful Undo and Delete operations.

Note: The **Edit** menu operates only on images. If you want to edit an animation project, this is done with the Project Editor of the **T**ools menu.

Shortcut: To quickly access the Edit menu for an empty window, point with the mouse to the client area of the window, and click with the left mouse button. This is useful when pasting an image from the clipboard into an empty window.

Undo

Use Undo to reverse the most recent operation performed on a particular image. If you use Undo and then change your mind, you can choose it again to undo the Undo. For instance, if you convert an image from color to grayscale, Undo will change it back to color. If you then choose Undo again, the image will go back to grayscale.

Undo works on an image-by-image basis. This means that if you have multiple windows (images) open, you could change Image #1, go to another window and work on Image #2, then come back to Image #1 and still be able to use Undo to go back to the unchanged version of Image #1.

Cut

Cut moves the entire image in the active window to the Windows Clipboard, from where it can be pasted to a **PhotoMorph** window or to any other Windows application.

To cut a portion of an image, or a special part of the screen, use the screen capture facility and the **Capture** menu (see next section, "The **Capture** Menu").

Copy

Copy makes a duplicate of the image in the active window and puts the duplicate in the Windows Clipboard. The image can then be pasted back into a **PhotoMorph** window, or to any other Windows application.

To copy a portion of an image, or a special part of the screen, use the screen capture facility and the **Capture** menu (see next section, "The **Capture** Menu").

Paste

Paste takes whatever image is in the Clipboard (placed there by another application, by using the screen capture facility, or via Copy or Cut in **PhotoMorph**) and pastes it to the active window. Paste can be used to transfer files from one application to another, as well as between windows in a single application.

When you paste to a window, the pasted image will take up the *entire* window. Because of this, you will probably want to open a new (empty) image window, using the Image/New option in the **File** menu, to create the window you will paste into. If you paste into a window that already has an image in it, Paste will annihilate the image that you pasted over. (To get it back, you can use Undo).

Note: If you regularly use Clipboard *files* (.CLP files) to transfer files from one device driver to another, please see Chapter 10 for important information about device dependency.

Delete

Delete removes the contents of a window. The contents will *not* be stored in the Clipboard if you use Delete. If you use Delete by mistake and annihilate your image, you can bring it back by using Undo, as long as you have not made any changes to the window in the interim.

Chapter 2: Image Preparation

Once you have imported the images you want to use in *PhotoMorph*, you may want to do some additional preparation and manipulation of the images. In this chapter, we discuss PhotoMorph's facilities for preparing still images to use in creating special morphing effects. These include:

- ◆ Screen Capture
- ◆ Color Reduction
- ◆ Image Manipulation (crop, scale, rotate, etc.)

The Capture Menu

Use the **Capture** menu to create screen captures and to set options for capturing images from any program running under Microsoft Windows. (A screen capture is essentially a snapshot of your computer screen or a portion thereof.) You can save the captured image to a file, to the Clipboard for pasting into any Windows program, or to a new *PhotoMorph* window. Options allow you to set the capture area to be any region of the screen you wish. The last capture area type selected will be stored between sessions, and will be the default the next time you run *PhotoMorph*.

The Capture Key ("Hot Key")

The default capture key (the "hot key") is the "F11" function key. Use the **Capture** menu options to specify what region of the screen you wish to capture, then use the hot key to execute the screen capture.

When you hit the hot key, the specified region of the screen will be captured, except in the case when User-Defined Rectangle is the specified region. In this case, the regular cursor will change to a selection cursor (crosshair), which you can use to outline your chosen rectangular region.

You can specify whether you want your captured image to be sent to a file, to the Clipboard, or to a new *PhotoMorph* window by using Set Options (see below).

To change the hot key to be any of the 12 function keys, use Set Options (see below).

Active Window

This option captures an image of the window active at the time of the capture.

Active Application

This option captures an image of all windows enclosed in the running (active) application window (including the application's own window).

Entire Screen

This option captures an image of the entire screen.

User-Defined Rectangle

Choose this option to capture any rectangular portion of the screen. When you press the Capture (hot) key, the cursor will become a cross-hair. Hold the mouse button down and drag the mouse from one corner of the desired area to the opposite diagonal corner. The rectangular portion of the screen you dragged over will be captured. As you drag the mouse, the dimensions of your selected rectangular area will be displayed. If you want the chosen area to be a perfect square, hold the Shift key down while you drag the mouse.

Note: If you drag over a square area by holding down the Shift key while dragging, the area may or may not *appear* square on your monitor, depending on the monitor's aspect ratio (the ratio of its pixel height to pixel width). However, it will be a square in that each side will measure the same number of pixels. For more information on device dependency and how it affects images' appearances, see Chapter 10.

Window Under Mouse

Use this option to capture an image of whichever window is under the mouse at the time that the capture key is hit.

This is the best option to use if you wish to capture a "control" or "client" window (such as a button, a list box, etc.).

Set Options



THE CAPTURE OPTIONS DIALOG BOX

Capture

Use this option to direct your captured screen image. Choose:

- ♦ *To File* - Directs your captured image to a specified file on your disk. Use the Output File group (see below) to set the filename, to add automatic incrementing of filenames, and to specify the attributes of the output file.
- ♦ *To Clipboard* - Pastes the captured image into the Windows Clipboard.
- ♦ *To New Window* - Automatically creates a new window in **PhotoMorph** and places the captured image in this window.

Output File

Use this group to set attributes of the output file, if you are sending your screen capture to a file. (This group will be disabled if you have chosen to capture to the Clipboard or to a New Window.)

Set the output filename by typing it in the Filename: box. Specify an output file type by clicking on the File Type: down-arrow and then clicking again on the desired file type in the list.

You may opt to add an automatic increment number to your screen capture filenames. This is a great time-saver if you plan to file several different screen captures, one after the other. To use the auto increment, turn on the Increment File Number option. The default starting number will be 1. Use the edit box to change the starting number if you wish. When the Increment File Number option is selected and a screen capture occurs, **PhotoMorph** will save the image and append a two-digit number to the end of the specified output filename. For example, if your output filename is set to be "SCREEN.DIB" and you are incrementing file numbers, then the first screen capture image will be saved in a file called "SCREEN01.DIB". The next screen capture would be saved as "SCREEN02.DIB," and so on. The number in the Increment File Number option will be updated as you work, so you may check it or change it at any time.

Note: Filenames under DOS can be a maximum of eight characters long. This means that if you specify an output filename that is more than six characters long, **PhotoMorph** will truncate it in order to append the incremental two-digit number.

Window Capture

Capture Contents. Choosing this option will cause the screen capture facility to save only the contents of a window, excluding the window border and the title bar. This region is often referred to as the *Client Area*.

Capture Entire Window. This option causes the screen capture facility to save the entire window, including the border and title bar.

Hot Key

Set the "hot key" (capture key) to be any of the 12 function keys with this option.

Current Binding tells you what the hot key is at present (the default binding is F11).

Click on the arrow key next to the text box to get a list of all 12 function keys (F1-F12).

The Alt & Ctrl check boxes can be used to specify an Alt and/or Ctrl and function key combination. Click on the key you want to select, then click OK.

The Colors Menu

Use the **Colors** menu to convert between color configurations. You will have various options for color reduction schemes, and you may also choose whether or not to use dithering.

(Shortcut: To access the Colors menu quickly, simply point to an image with the mouse, and click with the left mouse button. The menu will appear as a pop-up next to the image.)

You may choose to convert an image to a higher-color format by choosing the appropriate "Increase colors to..." option.

Important Note: It is important to understand that simply converting an image to a format with more colors does not "add" colors to an image, but merely changes its format. For example, if you load a 16-color image and then choose "Increase colors to 256" under the **Colors** menu, you will *not* have 240 new colors in your image!

The "Increase colors to..." options are useful if you need to convert a file in order to use it in another program or with another device.

Another Important Note: It is very important to understand the difference between 1) *displaying* a higher-color image on a lower-color display device and 2) *converting* the image using a color reduction method (Flat Cut or Optimized Cut). Color information is **not** lost if you merely display the image with a device that cannot show all of its colors. However, when you choose to reduce the colors in an image by clicking on a color reduction method, all the colors in the image are lost (discarded) except those that the reduction operation keeps for the new reduced-color image.

For more information about color configurations, reduction algorithms, and dithering, see Chapter 10.

Color

Choose this option to convert the image to "color." (Some formats have a "color" tag and a "gray" tag. This option will *tag* the image as a "color" image. It will *not* magically change a grayscale image to a full-color one!)

Gray

Choose this option to convert the image to grayscale, and to tag the image as a "gray" image.

Monochrome

Converts the image to black-and-white. Choose Flat Cut or Flat Cut with Dither for color reduction. The dither method chosen is specified under the File/Settings menu.

16 Colors

Converts the image to a 16-color palette. Choose Flat Cut; Optimized Cut; Flat Cut with Dither; or Optimized Cut with Dither for color reduction. The dither method chosen is specified under the File/Settings menu. (See Chapter 10 for more information on color reduction methods and dithering.)

Choose Increase colors to 16 to save a monochrome format in 16-color format.

256 Colors

Converts the image to a 256-color image that has a palette. Choose Flat Cut; Optimized Cut; Flat Cut with Dither; or Optimized Cut with Dither for color reduction. The dither method chosen is specified under the File/Settings menu. (See Chapter 10 for more information on color reduction methods and dithering.)

Choose Increase colors to 256 to save lower-color formats in 256-color format.

16-Bit Color

Converts the image to 16 bits (32,767 colors) with no palette. (This format is used only by certain video boards, such as Sierra DAC-based video boards, the Targa-16 video board, and the IBM XGA video board.) Choose Flat Cut or Flat Cut with Dither for color reduction. The dither method chosen is specified under the File/Settings menu. (See Chapter 10 for more information on color reduction methods and dithering.)

Choose Increase color to 16-bit to save lower-color formats in 16-bit format.

24-Bit Color

Converts the image to 24-bit, or 16.7 million colors. Choose Increase color to 24-bit to save lower-color formats in 24-bit format. Choose Decrease color to 24-bit to convert a 32-bit image to a 24-bit format.

32-Bit Color

Converts the image to 32-bit format. Choose Increase color to 32-bit Opaque or Increase color to 32-bit Transparent to save lower-color formats in 32-bit format. Opaque will create an Alpha Channel which is opaque to a background image, Transparent creates an Alpha Channel which is completely transparent to a background image. Refer to the Overlay section for more information

PhotoMorph supports 32-bit images in Targa, TIFF and BMP format. A 32-bit image does not have more colors than a 24-bit image, it contains an 8-bit Alpha channel in addition to a 24-bit image. That Alpha Channel overlays the image and specifies the transparency of parts of the image. See Chapter 9 (advanced topics) for a complete discussion of alpha channels.

The Image Menu

With the **Image** menu, you can re-orient your image by rotating, change its size by cropping or scaling, and perform a variety of other operations such as inverting colors, mirroring, framing, tiling, captioning, and masking. Controls for contrast/brightness, hue/saturation provide a means of color correction for images. By combining these operations, you can achieve great-looking special effects, too.

Digital re-sampling methods are used to create very high-quality rotated and scaled images.

On the next few pages, you'll find a graphic index showing examples of each **Image** menu operation. Following the index are descriptions of each operation. The **Image** menu does not apply to .AVI animations, only static images.

Graphic Index of Image Menu Operations

ORIGINAL IMAGE:



INVERT IMAGE



FLIP IMAGE



MIRROR IMAGE



CROP



SCALE

48% scale:



178% scale:



ADJUST ASPECT

Height 50%:



ROTATE

90 degrees:



27 degrees:



FRAME/CAPTION

Frame:

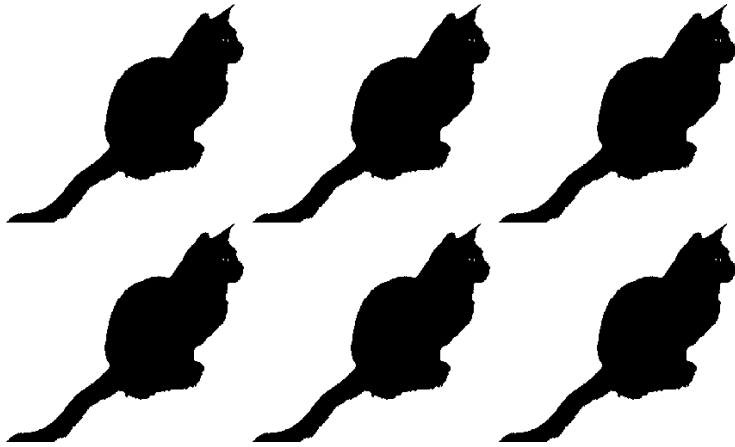


Frame with Caption:

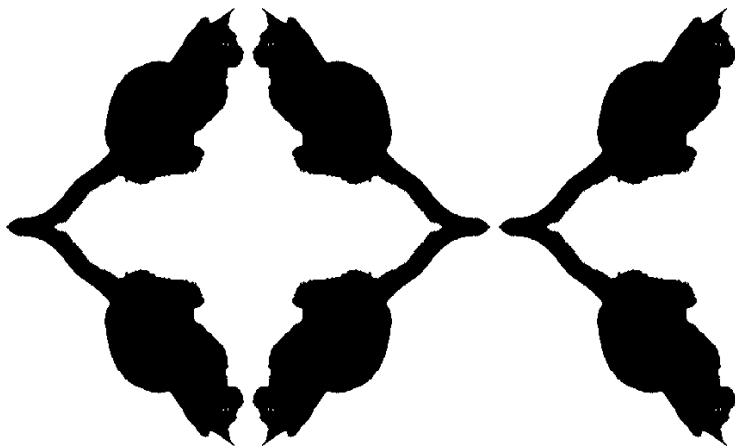


TILE

Tile (2 x 3):



Tile (2 x 3 with mirroring):



MASK

Mask (Oval):

Mask (Checkers):



Invert Image

Use this menu item to invert the colors in your image. ***Invert Image*** takes each of the original image colors, computes their opposite in the color spectrum, and changes each original color to its opposite. As a simple example, if there is a color in your image which is composed of a lot of red, a little blue, and a little green (which would be a light red), the inverted color would be composed of a little red, a lot of blue, and a lot of green (which would be a dark cyan).

Flip Image

Use this menu item to flip your image along the horizontal axis.

Mirror Image

Use this menu item to flip your image along the vertical axis. This will create a mirror-image of the original.

Crop...

Use this option to crop off portions from the sides of your image.

The ***Crop*** dialog box lets you specify portions of the image you want to cut from top, bottom, left, and/or right. A thumbnail version of the image is included in a previewing box at left. Use this to monitor your crop-line locations as you crop the image.

Cropping an image has no effect on its color (bits-per-pixel) configuration. In other words, if you start with a 256-color (8-bit) image, it will be stored as an 8-bit image after it has been cropped.



THE CROP DIALOG BOX

The *Crop* group in the dialog box has fields in which you can enter pixel values to crop off of the *Top*, *Bottom*, *Left*, and/or *Right* of your image. As you enter pixel values, crop lines will appear at the specified locations in the thumbnail previewing box.

Another way you can crop your image is to point with the mouse to a crop line in the previewing box (the cursor will change to a double-sided arrow), hold down the left mouse button, and drag the line to the new location. When you first open the **Crop** dialog, the crop lines are located at the edges of the image in the previewing box. As you drag, the pixel values in the *Top*, *Bottom*, *Left*, and *Right* fields will change dynamically. You can also point to a corner (a four-sided cursor appears) and drag the corner, to move two crop lines simultaneously. To move the entire crop-line box around the image, just point anywhere inside the box (the cursor will change to a hand), click, and drag the box to its new location.

The new dimensions (in pixels) of the image will be displayed in the *Dimensions* group (see below).

The *Dimensions* group allows you to enter new pixel dimensions for the image in the *Width:* and *Height:* edit boxes. By default, the crop lines will be centered on your image. For example, if you enter a *Width:* value that is 20 pixels less than your original image's width, crop lines will appear 10 pixels in from the left and right edges of the image.

The *Dimensions* group is quite useful if you want your final cropped image to be of a specific size. Just enter the final dimensions in the *Width:* and *Height:* boxes. Then, if the crop lines are not where you'd like them to be, you can use the hand cursor to move the crop box around.

The *Display* group allows you to choose whether or not to preview your image at its actual size.

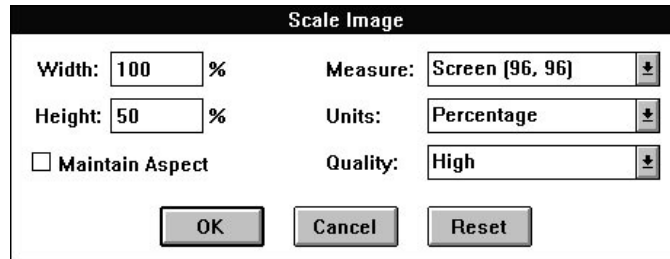
If your image is small enough that it fits entirely within the borders of the previewing box, the *Show Real Size* radio button will be permanently selected (since your image will automatically be previewed at full size).

If the entire image does not fit in the previewing box, you may choose between *Show Real Size* and *Fit In Window*. *Fit In Window* is good for an overall view of your crop-line locations. *Show Real Size* is useful for examining a portion of your image up close. If, for instance, you need to see if your crop line is touching or just missing an object in the image, *Show Real Size* lets you take a closer look. Scroll bars allow you to move around the image.

Scale...

Use this option to enlarge or reduce the overall size of your image.

The **Scale Image** dialog box allows you to: set a new width and/or height for the image; scale by percentage; choose high-quality or high-speed scaling; choose different units of measurement; specify dots-per-inch for different devices (allowing you to create predictable image sizes for particular devices, such as printers); and correct aspect ratio and resolution problems.



THE SCALE IMAGE DIALOG BOX

You may specify a new image size by typing values into the *Width:* and/or *Height:* fields. Use the *Maintain Aspect* check-box to choose whether or not to maintain the image's original aspect ratio (in this instance, **aspect ratio** means the ratio of image height to image width). If you select the *Maintain Aspect* check-box and then change either the *Width:* or the *Height:* value, the other value will change automatically, to preserve the same aspect ratio. If you de-select the *Maintain Aspect* check-box, and you enter *Width:* and *Height:* values that do not preserve the original aspect ratio, the result will generally be an image that looks squashed or elongated. (For a discussion on how to correct aspect ratio problems, see the following section, **Correcting Resolution and Aspect Ratio Problems.**)

The *Measure:* list box allows you to change the resolution by which the scaled image is measured. This allows you to create images which are of a predictable size for a particular device. There are three choices: *Screen (x, y)*, *Printer (x, y)*, and *Custom*. The values in parentheses represent dots-per-inch (horizontal, vertical) for the chosen device.

Screen (x, y) represents what Windows believes is your monitor's resolution. (This may not, in fact, be accurate. For a discussion of how to determine and enter your correct screen resolution, see the following section, **Correcting Resolution and Aspect Ratio Problems.**)

Printer (x, y) represents your attached printer. If you want to use a device that has a different resolution, use *Custom*. After you click on *Custom*, you can enter values for horizontal and vertical dots-per-inch in the boxes provided.

Here's an example of how to use the *Measure:* box. Say you would like to create an image that will be 25 centimeters wide by 50 centimeters high when printed on an attached laser printer. The laser printer has a resolution of 300 dots-per-inch. Since screens generally have resolutions of only 70-100 dots-per-inch, any image you create on your screen at a particular size will print at only about one-third that size (or less). So, to ensure correct printing size, choose *Printer (300, 300)* from the *Measure:* list box (the x and y values will be set according to your attached printer's resolution.) Choose

Centimeters from the Units: list box. Now enter **25** in the Width: box and **50** in the Height: box. Click OK. Now your image will be 25 cm x 50 cm when printed on your 300 dpi printer (unless the image is scaled during the printing operation).

The Units: list box allows you to choose the units by which the image is measured. Choose *Pixels*, *Percentage*, *Inches*, or *Centimeters*. *Pixels* is useful for correcting aspect ratio problems and for dealing with images on a device- dependent level. *Percentage* lets you change the size of the image relative to its original size. *Inches* and *Centimeters* are useful for creating images of a predictable size on a chosen device.

The Quality: list box lets you choose between *High* or *Low* quality for your scaled image. If you choose *Low* quality, the scaling operation will be fast, and the resulting image will not be as good as it could be. With *Low* quality, the scaled image will be created in the same color configuration (bits-per-pixel) as the original image.

If you choose *High* quality, the scaling operation will take slightly longer, but will produce the best-looking image. In a *High* quality scaling operation, the scaled image will be created in 24-bit color (for color images) or in 8-bit grayscale (for gray or monochrome images).

Correcting Resolution and Aspect Ratio Problems

Resolution

As we mentioned above, there's a possibility that Windows may enter an **incorrect resolution** for your screen in the Measure: list box under *Screen (x, y)*. If it seems to you that the resolution values are incorrect, you can use the Custom entry in the Measure: list box to enter your monitor's actual resolution.

To figure out your monitor's actual resolution: Measure the width of your monitor along the top or bottom of the screen (you can just use a regular ruler). As an example, assume the width is 10 inches. Now measure the screen's height. Assume the height is 7.125 inches.

If you are running a VGA device, the resolution of your device driver is 640 x 480 pixels (width x height). Divide your device's pixel height (640) by the physical height of your screen to get your screen's dots-per-inch along the height dimension:

$$640 / 10 = 64 \text{ dpi}$$

Divide your device's pixel width (480) by the physical width of your screen to get your screen's dots-per-inch along the width dimension:

$$480 / 7.125 = 67 \text{ dpi.}$$

Now you can plug these numbers into the Custom Height and Width fields and create accurately-measured images for your screen.

Aspect Ratio

One common problem you may encounter when moving images from one display device to another is the change in **aspect ratio**. Aspect ratio, as the term is used in this manual, is the ratio of a device's dpi (dots-per-inch) along its height to dpi along its width. If an image is displayed on a device that has a different dpi value along one or both axes than the device on which the image was created, its aspect ratio will be incorrect. The image will generally appear either squashed or elongated. There are two common operations that are often desired when working with devices that have different aspect ratios: converting an image to have the **same absolute size** on the new device, and converting the image to have the **same relative aspect ratio**.

Same Absolute Size

To convert an image to the same absolute size on a new device you must know the absolute size of both display devices as well as the devices' pixel resolutions. This allows you to compute the device-independent dpi resolution for each device. Once the dpi is known it is a simple matter to scale the image to the proper size.

As an example, imagine that you have a picture of dimensions 160 pixels wide by 58 pixels high. The picture was created on a CGA device with a monitor that measures 10 inches wide by 7 inches high. CGA pixel resolution is 640 x 200. So the CGA device's resolution (dots-per-inch) would be:

$$200 \text{ pixels} / 7 \text{ in} = \mathbf{28.57 \text{ dpi}}$$
 along its height

$$640 \text{ pixels} / 10 \text{ in} = \mathbf{64.00 \text{ dpi}}$$
 along its width

On this device, the picture's physical dimensions would be:

$$58 \text{ pixels} / 28.57 \text{ dpi} = \mathbf{2.03 \text{ inches high}}$$

$$160 \text{ pixels} / 64 \text{ dpi} = \mathbf{2.50 \text{ inches wide}}$$

If we use a Super VGA device with a pixel resolution of 640 x 480 (assuming the same-sized monitor as the CGA display), its resolution (dpi) would be:

$$480 \text{ pixels} / 7 \text{ in} = \mathbf{68.57 \text{ dpi}}$$
 along its height

$$640 \text{ pixels} / 10 \text{ in} = \mathbf{64.00 \text{ dpi}}$$
 along its width

Now, imagine that you display the CGA-created image on the Super VGA device (still assuming both monitors are 10 x 7 inches). The picture, of course, still measures 160 pixels wide and 58 pixels high. However, on the VGA device, its physical dimensions would be:

$$58 \text{ pixels} / 68.57 \text{ dpi} = \mathbf{0.85 \text{ inches high}}$$

$$160 \text{ pixels} / 64.00 \text{ dpi} = \mathbf{2.50 \text{ inches wide}}$$

So, without correcting for the different aspect ratio, the image would appear very squashed on the VGA.

To make the image have the same absolute size on the VGA device you must start out with the original size on the CGA device, and from there work out the new pixel

size using the device-independent dpi information. Since, in this case, both devices happen to have the same dpi along the dimension of width, you only need to alter the image's height. To get the desired height of 2.03 inches, given the VGA's height dpi of 68.57, you would multiply dpi by inches to get the pixel height:

$$68.57 \text{ dpi} * 2.03 \text{ in} = \mathbf{139 \text{ pixels}}$$

So the image needs to be 139 pixels high on the new device to be the same size as it was on the old device.

To perform this action on the actual image, you would go to the **Scale** dialog box, de-select *Maintain Aspect*, and enter **139** in the *Height:* box. Now your image will be 2.03 x 2.5 inches and will no longer look squashed.

Same Relative Aspect Ratio

Although there are an infinite number of ways to convert an image so that it has a particular aspect ratio (1:2, 2:4, 3:6, etc.), the most commonly-desired results are for an image to maintain either the same height or the same width (measured in pixels). This can be accomplished by computing the dpi resolutions of the two devices and then computing a new height or width.

As an example, let's say you have an image created on a CGA device which has dimensions of 320 pixels wide by 200 pixels high. You want to save it as a VGA image with a height of 200 pixels (the same pixel height as the old CGA image), and to correct its aspect ratio. So you need to find the width, in pixels, which will produce an image with the new VGA aspect ratio, given a height of 200 pixels. Using the same CGA/VGA data as above you have aspect ratios of:

$$\text{VGA: } \mathbf{68.57 \text{ dpi} / 64.00 \text{ dpi} = 1.07}$$

$$\text{CGA: } \mathbf{28.57 \text{ dpi} / 64.00 \text{ dpi} = 0.45}$$

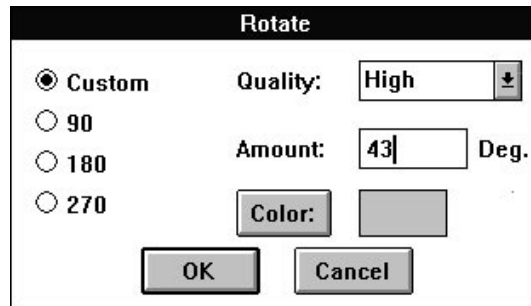
Now, to keep the height the same and compute a new width you would have:

To keep the width the same and compute a new height, you would have:

To accomplish this last aspect change in PhotoMorph you would go to the **Scale** dialog box, de-select *Maintain Aspect*, choose *Pixels* as the unit of measure, and enter the new height (475) in the *Height:* edit box.

Rotate...

Use this menu item to rotate your image by any number of degrees, positive or negative, and to choose a background color for the rotated image.



THE ROTATE DIALOG BOX

Choose *Custom*, *90*, *180*, or *270* for degrees of rotation. If you choose *Custom*, you may enter any integer in the *Amount:* edit box, and your image will be rotated by that number of degrees. Rotation is to the right (clockwise) if the integer is positive, to the left (counterclockwise) if the integer is negative.

You may use the *Quality:* list box to choose between *High* and *Low* quality for the final rotated image.

If you are rotating the image by *90*, *180*, or *270* degrees, the quality will always be *High* (in other words, there will be no difference in appearance of the image or in speed of the operation, whether you choose *High* or *Low* quality). If you choose *90*, *180*, or *270* for degrees of rotation, the rotated image will be created in the same color configuration (bits-per-pixel) as the original image. For instance, if your original image was a 4-bit (16-color) image and you rotate it by 180 degrees, the rotated image will be created as a 4-bit (16-color) image as well.

If you are rotating the image by any other number of degrees, you will be performing a *Custom* rotation. If you choose *Low* quality for a *Custom* rotation, the rotation operation will be fast, and the resulting image will not be as good as it can be. With *Low* quality, the resulting image will be stored in the same color configuration (bits-per-pixel) as the original image.

If you choose *High* quality for a *Custom* rotation, the rotation operation will be slower, but the resulting image will look much better. In a *High* quality rotation, the rotated image will be created in 24-bit color (for color images) or in 8-bit grayscale (for gray or monochrome images).

The final quality of the rotated image is dependent on the image's resolution. One way to increase an image's resolution is to first use the *Scale...* operation to enlarge your image (say to 300%, or 3 times original size), then perform the *Rotate...* operation, and finally scale the image back down to its original size. Working with the image at a higher resolution (larger size) will increase the quality of the image when it is shrunk back to its original size.

In a *Custom* rotation, the rotated image's dimensions will be *larger* than the original image's dimensions. (*Rotate...* draws a rectangle around the rotated image, with edges tangent to the rotated image's corners. You will thus have portions of "background" showing behind the rotated image.) You may choose a background color for the rotated image by clicking on the *Color:* button. The background color may be chosen from a palette corresponding to your original image's color configuration (for monochrome images,

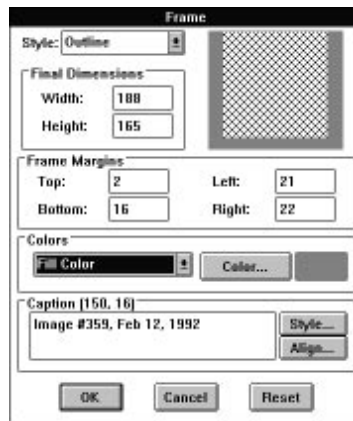
choose black or white; for 4-bit images, choose among 16 colors; etc.). If your original image was in 24-bit color, you may choose any color for the background.

When you click on the Color: button, a color-chooser dialog box for the present color configuration appears (except for monochrome, where the color toggles between black and white). For 4-bit and 8-bit files, the color palette will have 16 colors and 256 colors to choose from, respectively. For 24-bit files, the standard Windows color-chooser dialog box appears. **Note:** If you are choosing a color for a 24-bit image, remember to check the **luminance value** in the color-chooser dialog (this can be adjusted with the slider on the far right). If luminance is set to 0, your color will always come out *black*, and if it is set to 240 (the highest value), your color will always come out *white*.

Frame/Caption...

Use this menu item to create a custom frame and to add captions to the image.

In the **Frame/Caption Image** dialog box, you will find options for choosing a frame style; specifying a framed image's final dimensions; specifying and previewing frame margin measurements; adding caption text; and choosing colors for frame fill, frame outline, and text.



THE FRAME/CAPTION DIALOG BOX

From the Syle: list box, you may choose *Filled* or *Outline* as the frame style. *Filled* creates a frame filled with a specified color. *Outline* creates a frame with a one-pixel outline of a different color from the fill color. (Use the Color: button to name a color for frame fill and frame outlines.)

In the Final Dimensions group, you may enter the dimensions, in pixels, of the finished image (picture plus frame). As you enter the picture's final dimensions, the Frame Margin values (see Frame Margins below) will change dynamically, centering the image within the frame. **Please note:** The Final Dimensions width and height values cannot be smaller than the width and height of the image you wish to frame. In other words, the frame cannot cover any part of the image but must only wrap around the outside of the image. If you want the finished dimensions to be smaller, you should first use **Crop...** or **Scale...** to cut down the size of the image before framing it.

In the *Frame Margins* group, you may specify the width of the frame, in pixels, at the *Top*, *Bottom*, *Left*, and *Right* of the image. As you alter these values, the *Final Dimensions* values will change dynamically to show you the final height and width of the framed image. A previewing box at the top right also changes dynamically as the *Frame Margins* values change. (The frame you've specified appears in black, while the hatch-marked area represents the framed image.)

Use the *Colors* group to choose colors for frame fill, frame outline, and caption text. In the drop-down list box, choose the area for which you want to pick a color (*Fill Color*, *Outline Color*, or *Text Color*), then choose the color with the *Color:* button. Colors may be chosen from a palette corresponding to the original image's color configuration (except for 24-bit images, for which any color may be chosen).

When you click on the *Color:* button, a color-chooser dialog box for the present color configuration appears (except for monochrome, where the color toggles between black and white). For 4-bit and 8-bit files, the color palette will have 16 colors and 256 colors to choose from, respectively. For 24-bit files, the standard Windows color-chooser dialog box appears. **Note:** If you are choosing a color for a 24-bit image, check the **luminance value** in this dialog (adjust with the slider on the far right). If luminance is set to 0, your color will always be *black*, and if it is set to 240 (the highest value), your color will always come out *white*.

In the *Caption (x, y)* group, you may enter any text you wish to overlay upon the image. (You are not required to create a frame in order to place text upon your image.) The x and y values that are displayed next to the word *Caption* represent the width and height (in pixels) of the caption that you create. This allows you to create a frame in which your caption will fit. **Note:** If your caption text does not fit in your frame or on your picture, the text will be *truncated*, not wrapped.

Click the *Style:* button to select your font, font style (bold, italic, etc.), size, and effects. Choose a text color with the drop-down list box in the *Colors* group: click on *Text Color*, then pick a color with the *Color:* button. (See above for information on the *Color:* button.)

Click the *Align:* button to position your text along the horizontal and vertical axes. Choose *Left*, *Center*, or *Right* align in the *Horizontal* group, and *Top*, *Center*, or *Bottom* align in the *Vertical* group.

You should also consider the special effects you can achieve by combining various operations in the **Image** menu. For instance, to run a caption diagonally across your image, first rotate the image by 45 degrees, caption it, then rotate back to its original orientation.



SPECIAL TEXT EFFECT USING
FRAME/CAPTION AND ROTATE

The final appearance and quality of the framed image and caption text is dependent on the image's resolution. One way to increase an image's resolution is to first use the **Scale...** operation to enlarge your image (say to 300%, or 3 times original size), then frame and/or caption it, and finally scale the image back down to its original size. Working with the image at a higher resolution (larger size) will increase the quality of the image when it is shrunk back to its original size.

Tile...

Use this menu item to create multiple copies (tiles) of your original image and organize them in an array (as though the images were tiles being laid).



THE TILE IMAGE DIALOG BOX

The **Tile Image** dialog box provides you with a Width: and a Height: field. Use these fields to specify how many tiles of the image you want along the horizontal (Width) and vertical (Height) dimensions.

Select the Mirror Tiles option to create mirror effects. This option will mirror tiles both along the horizontal and along the vertical axes. If you wish to mirror only along one axis, first tile along the mirrored axis with Mirror Tiles selected; then tile along the non-mirrored axis with Mirror Tiles de-selected.

Mask...

Use this menu item to create special effects by masking out (hiding) parts of your image with the figures and patterns provided.



THE MASK IMAGE DIALOG BOX

In the **Mask Image** dialog box, you can choose from an assortment of shapes for your mask. The *Shape:* box at right will display the shape you choose from the *Name:* list at left. By default, the black areas in the *Shape:* box will be the areas through which your original image will show, and the white areas will be masked. Selecting Mask Alpha Channel will apply the mask only to the channel of a 32-bit image. Selecting Color Channel masks only the color part of a 32-bit image. If you select the *Invert Mask* option, however, the white areas in the preview box will be the areas through which your image will show, and the black areas will be masked. See Chapter 9 (advanced topics) for further information on alpha masks.

Use the *Mask Color...* button to choose a color for the masked parts of the final image. Colors may be chosen from a palette corresponding to your image's color configuration (i.e., black or white for a monochrome image, 256 colors for an 8-bit image, etc.). If the original image is in 24-bit color, any color may be chosen for the mask color.

When you click on the *Color:* button, a color-chooser dialog box for the present color configuration appears (except for monochrome, where the color toggles between black and white). For 4-bit and 8-bit files, the color palette will have 16 colors and 256 colors to choose from, respectively. For 24-bit files, the standard Windows color-chooser dialog box appears. **Note:** If you are choosing a color for a 24-bit image, remember to check the **luminance value** in the color-chooser dialog (this can be adjusted with the slider on the far right). If luminance is set to 0, your color will always come out *black*, and if it is set to 240 (the highest value), your color will always come out *white*.

The final quality of the masked image is dependent on the image's resolution. One way to increase an image's resolution is to first use the **Scale...** operation to enlarge your image (say to 300%, or 3 times original size), then mask the image, and finally scale the image back down to its original size. Working with the image at a higher resolution (larger size) will increase the quality of the image when it is shrunk back to its original size.

Contrast/Brightness

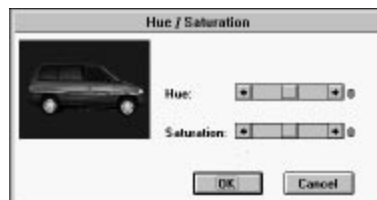
Use these menu items to increase the contrast and brightness of the selected image. Contrast will make dark parts of an image darker and will make light colors lighter. Brightness will make the entire image lighter. Use the slider controls to change the contrast and brightness on the preview image which is displayed. Then select OK to apply those changes to the image. You can use Channel to select the specific color plane you wish to modify or you can select RGB and change all colors with a single operation.



THE CONTRAST/BRIGHTNESS DIALOG BOX

Hue/Saturation

Use the Hue and Saturation controls to change to overall Hue and Saturation of an image.



THE HUE/SATURATION DIALOG BOX

The Filter Menu

PhotoMorph comes with 11 filter effects which can give an image additional distinction and flair. A filter is applied to the image in the active window. This process can be repeated several times to give more of an effect. All filters work with images having 16 or more colors. If an image is only black and white, or monochrome, the filter menus will appear grayed out and will not be applicable. If you really need to apply a filter to a black-and-white image you can promote the image to color using the settings in the **Colors** menu. The filter menu does not apply to AVI files. Use the Colorize filter to colorize AVI files.

The filters appear in the **Filter** menu in the following order:

Sharpen

The Sharpen filter will make a blurred image look more crisp. The opposite of Sharpen is Blur.

Sharpen Lines

The Sharpen Lines filter will accentuate lines and finer detail in an image.

Despeckle

The Despeckle filter will remove stray points of very different colors. This has a subtle smoothing effects.

Emboss

The Emboss is a very interesting effect which can make an image look like a three-dimensional relief, or sculpture.

Blur

The Blur effect gives an image a blurry appearance. It is especially noticeable on images with a lot of fine detail. As with all filters it can be used several times repeatedly on an image to make it very blurry or just a little blurry.

Median

The Median filter can be used repeatedly to create a Posterize effect where a few colors dominate an image.

Trace Edges

The Trace Edges filter will remove all features from an image except its edges. Because of the nature of the filter, the colors it creates are very bright. These colors can be toned down or simply converted to gray using the Contrast/Brightness or Hue/Saturation controls in the Image menu.

Noise

The Noise filter will add a small amount of randomly colored pixels evenly over an image. The effect is that of adding 'visual noise' to the image. If more noise is desired, the filter can be repeatedly applied as needed.

Maximum

The Maximum filter will increase bright or light colored areas in an image. Repeatedly applying this filter will spread the bright colors over an image much like water colors or finger paints.

Minimum

The Minimum filter is much like the Maximum filter except that it spreads dark colors.

Old Movie

The Old Movie filter makes the image look like it was taken using an old black and white movie camera.

The Window Menu

Use the **Window** menu to arrange multiple windows for ease of viewing, to tidy up window icons, or to close all open windows.

Tile

Tile arranges all of the open windows such that all windows are visible and none are overlapping. This is good for an overview of several images at once.

Cascade

Cascade stacks the open windows one on top of the other, like a deck of cards. The title bar of each window shows above the next one in the stack. This option is good for flipping through a screenful of images one at a time.

Arrange Icons

This option arranges any iconized windows at the bottom of the screen.

Close All

Closes all open windows. Before closing them, **PhotoMorph** will ask the user whether to save windows with images which have been altered since they were last saved.

*Shortcut: If you hold down the Shift key while you click on "Close All," the query about saving altered files will be overridden. All windows will close, and **no** changes will be saved.*

The Help Menu

Index

Index gives you a list of topics available through online [Help](#).

Using Help

[Using Help](#) gives you a help window which gives you information about using the online [Help](#) subsystem.

System Info

[System Info](#) gives you a display with complete information about the current state of your system.

Windows

- ◆ *Version* - Current version of Windows (3.0 or 3.1)
- ◆ *Path* - Your Windows directory path (ex. d:\windows)
- ◆ *System Path* - Your Windows system directory path (ex. d:\windows\system)
- ◆ *Mode* - Current mode of Windows (enhanced or standard)

Memory/Resource

- ◆ *Largest Free Block* - The largest currently-existent *contiguous* block of memory (not necessarily the largest *possible* block)
- ◆ *Free System Resources* - Percentage of free system (Windows) resources. This determines how many tasks can be going on at once; for example, how many windows can be open at once, how many applications can be running, etc.
- ◆ *Free Local Resources* - Percentage of memory resources available for **PhotoMorph** to utilize for creating windows, running operations, etc.
- ◆ *Free Memory* - Total bytes of free memory.

Tasks

- ◆ *Tasks Running* - Number of tasks currently running. (Each application or utility generally equals one task.) The [List...](#) button will attempt to show you the currently-active application names.
- ◆ *PMorph Windows* - Number of windows currently open in **PhotoMorph**.

Keyboard

- ◆ *Character Translation* - The alphabet supported by the keyboard.
- ◆ *Keyboard Type* - The make/type of the currently-installed keyboard. (For example, IBM Enhanced.)

DLL's

- ◆ *Function DLL's Loaded* - Number of Function DLL's loaded currently. (Function DLL's expand or in some way change the functionality of **PhotoMorph**.)
- ◆ *Format DLL's Loaded* - Number of Format DLL's loaded currently. (Format DLL's add file formats to **PhotoMorph's** import/export capabilities.)

Hardware

- ◆ *CPU* - Type of central processing unit (80386, 80486, etc.)
- ◆ *Math Co-Processor* - Present/Not Present

Disk

- ◆ *Temporary Disk Drive* - Location of the disk drive in which Windows stores temporary files (i.e., **d:**).
- ◆ *.EXE Path* - Location of the **PhotoMorph** executable file (i.e., **c:\pmorph**).

Display Device

This block displays information about your monitor (screen), or your currently-active printer. Use the radio button in the next section (Printer/Screen) to change from one to the other.

- ◆ *Device Driver* - Screen or name of active printer.
- ◆ *Size* - Size of your device (width X height, in millimeters). These figures represent the dimensions that Windows believes your device has. They are not necessarily the actual physical dimensions of the device (though they might be close).
- ◆ *Resolution* - Width X height of your device in pixels (these figures are exact).
- ◆ *Bits Per Pixel* - This number applied as an exponent of 2 gives the number of colors your display device is capable of displaying (i.e., if bits per pixel = 8, your device is capable of showing 256 (or 2⁸) colors). Your system's hardware determines this capability.
- ◆ *Color Planes* - A multiplier for bits per pixel. For example, if your device has 8 bits per pixel and 3 color planes, it is a 24-bit color device.
- ◆ *Device Brushes* - Number of logical device brushes. (Brushes are patterns of color. They may be pure colors or mixed, as in halftones.)
- ◆ *Number of Colors* - The number of entries in your device's color table.
- ◆ *Palette Size* - Number of colors in the device's palette, if it has one.
- ◆ *Reserved Colors* - Number of colors reserved by the system (Windows), which cannot be changed.
- ◆ *Color Resolution* - Physical resolution of the device. For example, a 256-color VGA device uses 6 bits per color component (of which there are three); therefore its color resolution is 18 bits.
- ◆ *Raster Capabilities* - A listing of your device's support for raster images:
 - ◆ **Ras** = raster-based device
 - ◆ **Bnd** = supports banding
 - ◆ **Blt** = ability to transfer bitmaps
 - ◆ **B64** = ability to transfer bitmaps larger than 64K
 - ◆ **DIB** = supports device-independent bitmaps
 - ◆ **Drw** = supports device-independent bitmaps
 - ◆ **Pal** = palette-based device

Printer/Screen

Choose Printer or Screen to change the Display Device information above.

Mouse

- ◆ *Mouse* - Present/Not Present
- ◆ *Double-Click Time* - Of your mouse buttons, in milliseconds. This value may be set using the Control Panel in the Windows Program Manager.

About PhotoMorph...

This item gives you a short message about the program and about North Coast Software.

Chapter 3: The Tools Menu

The **Tools** menu is the heart of the *PhotoMorph* application. With its three main tools you can create, edit, and view an animation project involving morphing, color keying, distortion, and transition effects.

The three main tools are:

- ◆ **The Project Editor** (which includes the Filter Editors)
- ◆ **The Preview Window**
- ◆ **The AVI Player**

These tools allow you to create and edit animation projects, save individual frames of an animation as separate files, and to create complete animations in Microsoft's Video for Windows standard AVI format, Autodesk's FLC (Flick) format, or as a series of 24-bit frames in any of the supported output file formats.

As you work with the tools in this menu, you can access context-sensitive help simply by pointing at any icon with the cursor. There is also a full Windows-based Help facility, accessed through the *Help* icon in each window's tool bar.



THE HELP ICON

Overview of the Tools Menu

The Project Editor gives you tools for creating and editing animation projects. *Filter Editors* are provided for colorizing, morphing, overlaying, color keying, warping, distorting, and transition effects. Animation files can be created from projects. Controls are provided for adjusting animation speed, compression, quality, and specifying output file type and number of frames.

The Preview Window lets you browse through the animation clip (section) which is currently loaded into the Project Editor. You have options for saving individual frames of the animation or copying images to new windows.

The AVI Player is an animation viewer you can use to look at a final animation in the AVI format. VCR-like controls are provided. The AutoPlay feature lets you construct presentations from multiple animations, in any order.

What Are Clips and Animation Projects?

A **clip** is simply an animation defined by a beginning and an ending image. You can imagine it as a section of film which consists of several individual cels, or frames. Just as running such a filmstrip through a projector would produce an animation on a screen, so playing a clip creates an animated sequence on your computer monitor.

A clip consists of:

- ◆ One or more images (video clips or bitmaps)
- ◆ A filter type (***Distort, Morph, Transition, Warp, or Overlay***)
- ◆ Frames (the number can be specified)
- ◆ Editing information

An **animation project** can include one or more clips, and contains global information which will apply to the entire animation, whether composed of one or many clips.

A minimum animation project consists of:

- ◆ One or more *clips* (see above)
- ◆ A video compression method
- ◆ An output file type
- ◆ A quality setting

Basic Steps to Creating an Animation Project

Following is a basic procedure for the creation of an animation project. For more detailed information on particular steps, please see the relevant sections in this chapter.

1. Load Start and End images for your project's first clip.

The Project Editor opens with an empty clip. To begin creating your first clip, you need to load Start and End images.

To load Start and End images:

Any images currently loaded in the **PhotoMorph** application will be listed in the Image List boxes below the Start and End image windows. If the images you wish to use are currently loaded, simply click on the down-arrow under the Start image window and choose the image by clicking on its name in the list. Do the same for the End image window.

If the images you wish to use are *not* currently loaded, click on the *Load* icon next to the Image List box below the Start window. The File dialog box opens. Use this dialog box to load the Start image. Repeat the process using the *Load* icon under the End image window.



THE PROJECT EDITOR WITH START AND END IMAGES LOADED

2. Choose a filter from the Filter Type list box: **Colorize**, **Distort**, **Morph**, **Overlay**, **Transition**, or **Warp**.



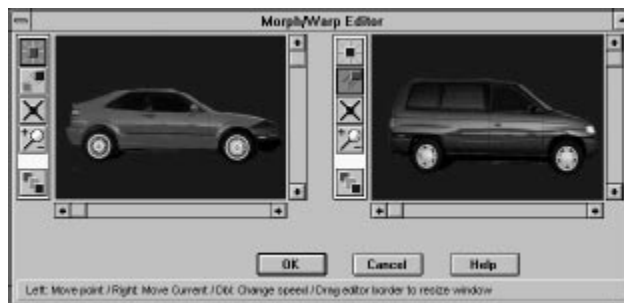
THE FILTER TYPE LIST

3. Use the Filter Editor to specify what is to happen during the clip.

To access the Filter Editor, click on the **Edit...** button or on the right arrow between the Start and End images.



The Filter Editor is different depending on the chosen filter type. (See **The Filter Editor** section for a complete description).



THE MORPH/WARP FILTER EDITOR

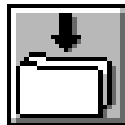


THE DISTORT FILTER EDITOR



THE TRANSITION FILTER EDITOR

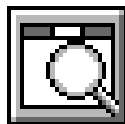
4. Click on the *Save Project* icon in the Project Editor tool bar to save your clip to disk.



THE SAVE PROJECT ICON

You will be prompted for a filename. The file extension for a *PhotoMorph* project is **.PMP**.

5. Preview the clip by choosing Preview Window from the **Tools** menu or clicking on the *Preview Window* icon in the Project Editor tool bar.



THE PREVIEW WINDOW ICON

The Preview Window allows you to browse through your clip and, if you wish, to save individual frames as image files. The window's slider corresponds to *percent progress* through the animation. (See **The Preview Window** section for a complete description.)

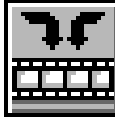
6. Add another clip if desired.

Click on the *New Clip* icon and begin again at step 1 to append a new clip to the one you just created.



THE NEW CLIP ICON

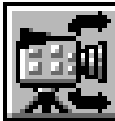
To see a display of the current clips in your animation, click on the *Storyboard* icon. The Storyboard also allows you to move clips around by cutting, copying, and pasting.



THE STORYBOARD ICON

7. Change animation parameters.

The *Animate* parameters display may be toggled with the *Animate Parameters* icon.



THE ANIMATE PARAMETERS ICON

You can specify:

- ◆ Speed
- ◆ Compression Method
- ◆ Output File Type
- ◆ Animation Quality

8. Click the **Create Animation** button to create an animation file.

Create Animation

Depending on which output file type you select, you will be prompted for a filename with an **.AVI** or **.FLC** extension, or you will be presented with the **Frames** setup dialog box. The animation output file will contain no information about individual clips, pairs of married points, etc., but only a sequence of animation cels. To make changes to an animation, you must use the Project Editor to make the alterations, and then re-create the output file.

9. If you wish to play an AVI animation, click on the *AVI Player* icon of the Project Editor, or choose AVI Player from the **Tools** menu.



THE AVI PLAYER ICON

Load your AVI animation into the AVI Player, and click the *Play* button. (See the **AVI Player** section for a complete description.)

10. If you wish to change the default values for some the of menus in the Project Editor, click on the User Preferences icon.



THE USER PREFERENCES ICON

- ◆ Filter Type
- ◆ Output File Type
- ◆ Floating Menus
- ◆ Animation Parameters: Units, Duration, Speed
- ◆ Beep After Render, Message After Render

These settings will be remembered by PhotoMorph from session to session.

The Project Editor

The Project Editor is your base of operations for creating an animation project. Context-sensitive help can be accessed by pointing with the cursor to any icon. Context-sensitive help messages are displayed at the bottom of the Project Editor window. Full Windows-based help can be accessed by clicking on the *Help* icon.



THE PROJECT EDITOR

The Project Editor's main features are:

- ◆ **Start and End image windows**
- ◆ **Filter Type selector**
- ◆ **Storyboard**
- ◆ **Animation parameters area**

Start and End Image Windows

The Start and End images can be loaded with the *Load* icons beside the Image File lists below each window. The Start and End images define the beginning and end states of a clip.

Any image or animation that can be loaded by *PhotoMorph* can be used as a Start or End image. The Start and End images are treated differently depending on which filter Type is selected.

Filter Type Selector

The Filter Type Selector box lists the available filters:

Colorize, Distort, Morph, Overlay, Transition, and Warp.



THE FILTER TYPE LIST

Understanding Filters

The Filter Editors are the heart of *PhotoMorph*, where the special effects are done. Through a series of computations, they use the information you enter to generate an animated series of frames which produce the specified effect: **Colorize, Distort, Morph, Overlay, Transition, or Warp**. Refer to Chapters 4 through 8 for detailed information on specific filters.

Colorize

The Colorize filter contains 18 colorizing effects that can be applied to images and AVI video clips. Effects like Old Movie, Contrast, and Emboss can be applied as dynamic video effects. See the example projects list for an example of a project which uses a **Colorize** filter.

Distort

This filter produces one of 22 different distortion effects over the course of the clip. It can be used with either one (Start) or two (Start and End) images. Examples include: lens, ripple, pinch, zoom in/out, etc. If two images are used, controls are provided to create a merge phase, during which one image segues into the second image. Graphic examples of distortion effects are provided in the **Distort Filter** section. See the example projects list for an example of a project which uses a **Distort** filter.

Morph

With the Morph filter, one can create an animated change from one image into a different image. The **Morph** filter uses two images or animations (Start and End). See the example projects list for an example of a project which uses a **Morph** filter.

Overlay

The **Overlay** filter contains several different effects all of which overlay on one or more images. **Blue Screen**, **Chroma Key**, **Luminance Key**, **Alpha Channel**, and **Text Overlay** are found in the **Overlay** filter. See the example projects list for an example of a project which uses a **Overlay** filter.

Transition

This filter produces various transition effects, such as those that might be used between sections (clips) of an animation, or at the end of an animation. Examples include: a curtain effect, or a fade from one image to another. The **Transition** filter uses one or two images, depending on which option is chosen. See the example projects list for an example of a project which uses a **Transition** filter.

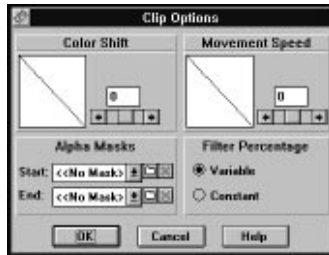
Warp

A filter which produces an animated change from one image into a different, warped version of the same image. The **Warp** filter uses one image or animation. See the example projects list for an example of a project which uses a **Warp** filter.

After loading Start and End images in the Project Editor and choosing a Filter Type, click on **Edit...** or on the right arrow between the Start and End images. The Filter Editor window will open. Context-sensitive help is available by pointing at any icon or control.

Options

The options dialog box has several features which can provide greater control of the filter effects.



The Options Dialog

Color Shift

The **Color Shift** control will adjust the speed that colors shift from the Start image to the End image. This is normally a linear transition but this too can be speed up or slowed down. A setting of 100 starts slowly and ends quickly. A setting of -100 starts quickly and ends slowly.

Movement Speed

The **Movement Speed** control can be used to add an acceleration or deceleration to a clip. This is very useful for creating more natural movement. A setting of 100 starts slowly and end quickly. A setting of -100 starts quickly and ends slowly.

Filter Percentage

The **Filter Percentage** control can make the affect of a filter gradually increase from 0% to 100% across a clip with the **Variable** setting. The **Constant** setting will fix a filter effect at a set percentage for the duration of the clip. This is useful for situations where you wish to hold a filter level constant over the duration of an entire clip (like embossing and entire AVI file and 100%). Even though the filter level is kept constant the AVI file will still be sampled normally.

Alpha Masks

The **Alpha Masks** control allows you to use any image or AVI file as a temporary alpha channel without having to keep the alpha channel merged inside the source images. **Start** allows you to specify an Alpha channel for the Start image, **End** allows you to specify an Alpha channel for the End image. For more details see chapter 9 (Advanced Topics).

Video Edit Options

The Video Clip Options Tool allows you to specify which frames to use within the current AVI file. This is done by specifying the starting frame and the ending frame for a particular animation. These frame points are respectively called the In Point and the Out Point. The power of this tool cannot be over stated. It provides a means of performing simple editing, thus eliminating the need to use a separate editing program for anything but advanced editing. Also included in the Video Editing Dialog is the ability to specify how the source animation is to be sampled. There are 3 options for sampling: By Time, By Frames and Whole Clip.



VIDEO EDIT OPTIONS DIALOG

Sampling by Frames means that PhotoMorph should attempt to use the same amount of source video (in seconds) that is going to be created in the clip. If the clip contains 30 frames and is going to be written at 20 frames-per-second, PhotoMorph would try to take 1.5 seconds of animation from the input AVI starting at the in-point. If there are not enough frames between the in-point and the out-point to sample the proper amount of time, PhotoMorph will switch over the Whole Clip sampling.

Sampling by Frames means that PhotoMorph should attempt to match the input with the output frame-for-frame. If the output is going to be 30 frames, PhotoMorph should use 30 frames of the input

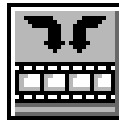
animation starting at the in-point. If there are not enough frames between the in-point and the out-point to sample the proper amount of time, PhotoMorph will switch over the Whole Clip sampling.

Sampling Whole Clip means that PhotoMorph will resample the frames between the in-point and the out-point to match the number of frames that is going to be created by the clip. For example, if there are 10 frames between the in-point and the out-point and the clip is going to output 30 frames, each frame of the input animation will be used 3 times.

See Chapter 9 (Advanced Topics) for more information on The Video Edit Options.

Storyboard

The Storyboard displays the clips which are included in the current animation and allows for moving and copying clips. Click on the *Storyboard* icon in the Project Editor tool bar to toggle the Storyboard display.



THE STORYBOARD ICON



THE STORYBOARD

The clip which is currently loaded in the Project Editor is outlined in *red*. The clip which has been clicked on (selected) in the Storyboard is outlined in *blue*.

Begin

The Begin button moves the selected clip (blue outline) to the beginning position in the Storyboard. This clip will now begin the animation.

Left

The Left button moves the selected clip (blue outline) one position to the left.

Load Clip

The Load button reloads the selected clip (blue outline) back into the Project Editor. The clip will now be outlined in red, as the currently-loaded clip.

You may also double-click on a clip to reload it into the Project Editor.

Right

The Right button moves the selected clip (blue outline) one position to the right.

End

The End button moves the selected clip (blue outline) to the ending position in the Storyboard. This clip will now end the animation.

Cut

The Cut button removes the selected clip (blue outline) from the sequence of clips on the Storyboard and puts it on the Windows Clipboard. It may then be pasted into a different position in the current animation, or into another animation.

Copy

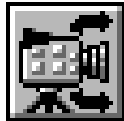
The Copy button puts a copy of the selected clip (blue outline) on the Clipboard. This clip may now be pasted into a different position in the current animation, or into another animation.

Paste

The Paste button inserts a clip from the Windows Clipboard. The clip will be inserted into the currently-selected position (blue outline), and the other clips will be shifted to the right.

Animation Parameters Area

The *Animate* parameters area provides settings for speed, compression, output file type, and quality of animations. Click on the *Animation* icon in the Project Editor tool bar to toggle the *Animate* parameters display.



THE ANIMATE PARAMETERS ICON



THE ANIMATION PARAMETERS AREA

Speed

The frames-per-second setting is a global variable, applying to the entire animation. In other words, you cannot set one speed for one clip and another speed for another clip in the same animation.

Any number of frames per second may be entered in the Speed edit box. However, the animation's actual speed will be limited by your computer's capabilities. Use a small frame size for smoother animations. (See Chapter 10 for more information about optimizing the speed and appearance of animations.)

Compression Method

Choose a compression method using the *Compression* drop-down list.

For the **AVI output file type**, you have several compression options. Video 1 is a compression method written by Microsoft. Indeo is a compression method written by Intel. These two methods have comparable compression rates. Cinepak is a compression method written by SuperMac. It is slow to compress but produces fast playback results.

If a compression method is listed more than once, use the item with the highest version number for best results. If you have any other AVI Codecs (compressor/ decompressors) installed on your computer, **PhotoMorph** will load them automatically for use in compressing and decompressing your animations. Look for them in the *Compression* drop-down list.

For the **FLC output file type**, you can choose no compression or RLE (run-length encoding) compression.

For the **Frames output file type**, you may choose ON or OFF for compression. ON specifies that compression will be used if the chosen output file format supports compression. OFF specifies that compression will not be used, if the chosen output file format supports uncompressed files.

The compression method is a global variable. In other words, you cannot assign one compression method to one clip and another compression method to another clip within the same animation.

Output File Type

The *Output* list lets you specify the output file type for your animation. Choices are:

- ◆ **AVI**
- ◆ **FLC**
- ◆ **Frames**

Use the *Setup* button to alter parameters of the output file.

For the AVI format, these parameters are:

- ◆ **Data Rate**
The kilobytes-per-second rate of transfer from the hard disk to the computer. Note that you must click on the check box to activate this parameter.
- ◆ **Key Frame rate**
The Key Frame rate tells the chosen compression algorithm how often to select a frame as a *key frame*. A key frame is a frame used as a marker in the compressed form of the animation. The compression algorithm uses key frames as landmarks and extrapolates the remaining frames of the animation from the key frames.

The lower the Key Frame rate, the higher the quality of the animation.

Note that you must click on the check box to activate this parameter.

- ◆ **Quality (0 - 100)**

The Quality setting affects the compression of the output file. The higher the Quality setting, the lower the rate of compression. **Note:** This setting affects the quality of the output file when it is written to disk, not when the animation frames are actually created.

You must determine a setting that produces a quality sufficiently high to satisfy you without using up all of your disk space. (An animation of dimensions 320 X 200 pixels which is 30 frames long will take up about 5.7 megabytes of disk space.) As a general guideline, a **Quality** setting of **75** will produce reasonably high quality and pretty good compression.

For the FLC output type, parameters are:

- ◆ **Dynamic Palette Option**

With the **Dynamic Palette** option, you can create FLC animations which contain many more colors than the standard 256-color FLC animations. When selected, this option instructs PhotoMorph to compute the best palette for each frame of the animation and then use this palette. It is possible to have a total number of more than 256 colors in the animation although each frame is

limited to only 256 colors. If **Dynamic Palette** is not selected, a standard 256-color palette is chosen and used for all frames in the FLC file.

NOTE: When using a dynamic palette, your animation must contain an **even number of output frames** in order to loop correctly in a FLC player.

- ◆ **Dither Frames Option**

With the **Dither Frames** option, you can instruct PhotoMorph to dither each frame of the FLC animation, which will produce smoother-looking images. Dithering works by mixing pixels of different colors to produce the appearance of more colors than are actually displayed. For best results, dithered FLC files should be displayed using high-resolution drivers for the FLC player. If dithering is turned off, the output frames will be produced with the closest matching colors.

For the Frames output type, parameters are:

- ◆ **Name**

Specify the base name for the output files. The base name will be used to create all of the different frame files. Example: A base name of 'frame' will produce file names of frame001.BMP, frame002.bmp, etc. The name of the currently-specified first frame file is displayed in the lower right.

- ◆ **Directory**

Specify the DOS path name for the output directory. All of the frame files will be saved to this directory. If left blank, the current directory will be used.

- ◆ **File Format**

Specify the type of 24-bit output file format which will be used for each frame file. These formats include:

BMP - Windows Bitmap
BMP - OS/2
DIB - Windows DIB
EPS - Encapsulated PostScript
JPG - JPEG Compressed
PCX - PC Paintbrush
TGA - Targa
TIF - TIFF

- ◆ **Start Frame**

Specify the first frame number to be used when numbering the output frame files. The frame files look like 'baseXXX', where 'X' is the frame number. Example: If you specified a starting frame number of 23, a base name of 'frame', and the TGA file format, the first output frame file would be called 'frame023.TGA' The name of the currently-specified start frame file is displayed in the lower right.

Quality

Choose **Low**, **Medium**, or **High** quality for the creation of your final animation frames. This setting affects the frame quality at the time of creation. High quality animations will have smoother action but will take longer to create. Low quality animations will be created faster but the animation will be less accurate. Remember that the quality specified here will also effect rendering times and quality during previewing and editing. For this reason it is often a good idea to keep the quality level set to Low or Medium until the final render. (See Chapter 10 for more information about optimizing the quality of your animations.)

Creating a Multi-Clip Animation

This section discusses the construction of an animation which contains more than one clip.

The Storyboard

The Storyboard portion of the Project Editor serves as the clip manager. The Storyboard keeps track of where each clip is positioned in the animation. Tools are provided for moving clips around, either by using arrow buttons or by cutting, copying, and pasting.

Each clip in an animation project is displayed in a cell of the Storyboard. The cell includes a thumbnail version of the Start and End images of the clip. If a clip uses only one image, as in a Warp or a Fade to/from Black, only that image will be displayed.

The clip which is currently loaded into the Project Editor is outlined in *red* in the Storyboard. The currently- selected clip (the clip most recently clicked on with the mouse) is outlined in *blue*. To reload a previous clip back into the Project Editor, double-click on it, or click on the Edit button of the Storyboard.

Refer to Chapter 3 for a detailed description of the features within the Storyboard.

Generating a Multi-Clip Animation

The procedure for generating a multi-clip animation is simple. After planning, building, previewing, and arranging the clips with the Filter Editors, the Preview Window, and the Storyboard, you need only to set global animation parameters and create a final animation.

Animation Parameters

Click on the *Animation Parameters* icon to toggle the display of parameters.

Speed

Speed is entered in frames-per-second. Since this is a global variable, the speed will apply to the animation as a whole. In other words, you cannot set one speed for one clip and another speed for another clip within the same animation.

Any number of frames per second may be entered in the Speed edit box. However, the animation's actual speed will be limited by your computer's capabilities. Though increasing the speed of the animation will make it appear smoother, you can also use

a smaller frame size for smoother animations. (See Chapter 10 for more information about optimizing the speed and appearance of animations.)

Compression Method

Choose a compression method using the *Compression* drop-down list.

Video 1 is a compression method written by Microsoft. Indeo is a compression method by Intel. These two methods have comparable compression rates. (Hardware support is available for playback of Indeo-compressed animations through Intel's ActionMedia cards.) Cinepak is a method written by SuperMac. It is slow to compress but produces fast playback results. You should create and view animations using each compression method to see which is best for your applications.

If you have any other AVI Codecs (compressor/ decompressors) installed on your computer, **PhotoMorph** will load them automatically for use in compressing and decompressing your animations. Look for them in the *Compression* drop-down list.

Since the compression method is a global variable, you cannot assign one compression method to one clip and another compression method to another clip within the same animation.

Output File Type

The *Output* list lets you specify the output file type for your animation: AVI, FLC, or Frames.

Use the *Setup* button to alter parameters of the output file.

For the AVI format, these parameters include:

- ◆ Data Rate
- ◆ Key Frame rate
- ◆ Quality (0- 50)

For the FLC format, these parameters include:

- ◆ Dynamic Palette
- ◆ Dither Frames

For the Frames option, these parameters include:

- ◆ Name (base name for each frame in the sequence)
- ◆ Directory
- ◆ File Format
- ◆ Start Frame

Quality

Choose High, Medium, or Low quality for your final animation. This setting affects how your animation frames are created. High quality animations will have smoother action but will take longer to create. Lower quality animations will be created faster but the animation will be less accurate. (See Chapter 10 for more information about optimizing the quality of your animations.)

Multiple Layers of Effects

Perhaps the most advanced feature in PhotoMorph 2 is the ability to use multiple filters in a single clip. This feature is very powerful for combining filters and creating new effects. This feature also takes some practice and patience to understand. The key to effectively using multiple filters is understanding how to combine them and how they interact. You can think of the multiple filters as three sinks which can be connected by a pipe.

If you used only a single effect, such as a morph between two images, your effect would use only one filter. If you wanted to combine the morph with another effect such as a transition, you would use two filters. To do this you would set up your morph exactly as you did before, then select Filter 2 by clicking on the [123] button. Clicking once will advance to the next filter. You would then select [Filter 1] in the Start image and select an image for the End image. After this, choose Transition from the Filter Type list. That's it for creating a clip with two filters. Filters can be used in any order and in any combination. You can use three transitions in a clip or you can use a morph, a transition, and an overlay in a clip.

A few things to remember when using multiple clips: Only the current filter is displayed in the Project Editor. The Source and Destination images will be updated to show the correct images for the current filter. The filter type will be updated, and so will the number of frames, and Options.

A restriction with using multiple clips is that when using an overlay, transition, or distortion filter, all images or video clips must be the same size.

Background Rendering

As a convenience for users who need to do other things while PhotoMorph is busy rendering amazing video effects, background rendering is now available. You can put PhotoMorph in the background and let it render while you run other interactive applications like word processing or image editing. Background rendering is automatic. Simply iconize PhotoMorph during a render or use Program Manager to Switch to another application.

PhotoMorph will display a message box to inform you when it has finished rendering.

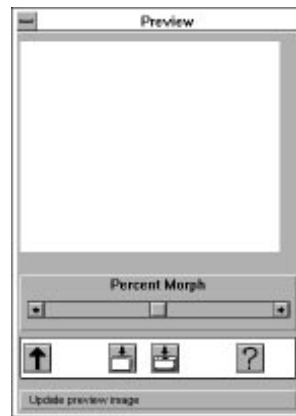
The Preview Window

The Preview Window lets you browse through a clip, save individual frames to files, and copy frames to image windows. Using the Preview Window is the fastest way to view the result of an animation project.

Context-sensitive help is available by simply pointing at any icon or control.

Previewing a Clip

To preview a clip, click on the Preview Window item in the **Tools** menu or press the Preview Window icon in the project editor.



THE PREVIEW WINDOW

The percentage slider in the Preview Window is used to browse through the current animation clip. The slider corresponds to progress through the clip over time; for example, move the slider halfway across the bar to see a frame 50% through the clip. (Depending on the final number of frames in your clip, the frames you can view in the Preview Window may or may not correspond to actual frames in an AVI animation created from the clip.) Using the slider to browse can help you decide if you need to adjust or alter your clip. For instance, if the metamorphosis in a morph or warp clip seems unconvincing or imprecise, you may want to refine it by using the Project Editor to add more point pairs.

Tools are provided for updating the preview image, saving a frame to a file, and copying a frame to a new window.

Updating the Preview Image



THE UPDATE IMAGE ICON

This tool is provided for updating the image in the Preview Window after work has been done in the Project Editor on the present clip, or if you have switched to a new clip. This option is provided since the update process is somewhat time-consuming, as the morph movie has to be recomputed for the update to occur.

Saving a Frame to a File



SAVE IMAGE TO FILE ICON

To save any individual frame to a file, slide the slider until the desired frame is displayed in the Preview Window. Click on the *Save Image to File* icon in the tool bar at the bottom of the window. A dialog box appears. Choose the desired file format from the box and click Save.

NOTE: *The Preview Window can save files only in 24-bit or 32-bit color formats.*

Export formats which support 24-bit color are:

- ◆ Windows Bitmap (BMP and DIB)
- ◆ Encapsulated PostScript (EPS)
- ◆ JPEG Compressed
- ◆ PCX
- ◆ Windows Compressed Bitmap (RLE)
- ◆ Targa (TGA)
- ◆ TIFF

Export formats which support 32-bit color are:

- ◆ Targa (TGA)
- ◆ TIFF
- ◆ BMP
- ◆ DIB

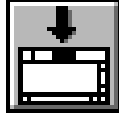
If you wish to save your file in another format or reduce its number of colors, you should either:

1. Copy the frame to an empty window from the Preview Window (see below for the procedure).
2. Use the **Colors** menu or **File/Image/Save As...** to reduce the number of colors in the image and/or to save to another format.

OR:

1. Save the image to a file from the Preview Window. in one of the listed 24-bit color formats.
2. Open the file and reduce the number of colors using the **Colors** menu or **File/Image/Save As...**

Copying a Frame to a New Window



THE COPY IMAGE TO NEW WINDOW ICON

The Preview Window is equipped with a tool bar at the bottom of the window.

To save any individual frame to a file, slide the slider until the desired frame is displayed in the Preview Window. Click on the *Save Image to New Window* icon in the tool bar at the bottom of the window. The frame will be copied to a new image window.

From the new window, the image may be saved in any supported export format.

The AVI Player

When you have finished editing an animation clip or project, create an AVI animation file by choosing **AVI** as your output file type (in Animation Parameters) and clicking on **Create Animation** in the Project Editor. Now you can use the AVI Player to view the final product. You can also set up multi-animation presentations with the AVI AutoPlay feature.

To open the AVI Player, choose AVI Player from the **Tools** menu, or click on the *AVI Player* icon in the Project Editor tool bar. Context-sensitive help is available by pointing at any icon in the window.



THE AVI PLAYER ICON

Load the AVI animation by clicking on the *Load Animation* icon and selecting the AVI file.



THE LOAD ANIMATION ICON

Use the controls to look at the animation. The controls provided are similar to standard VCR controls.

- ◆ Play



- ◆ Rewind



- ◆ Single-step back



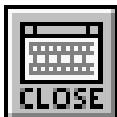
- ◆ Single-step forward



- ◆ Fast forward



Remember, the AVI file contains no project information. To alter an animation, you need to go back to the Project Editor, make changes, and re-create the AVI file. If your animation's action is jerky or abrupt, you might want to smooth it by increasing the number of frames in the animation or by decreasing the frame size. If the metamorphosis seems unconvincing or imprecise, you might want to add more married point pairs to refine the changes.



Use the Close button to close your AVI animation.

The AutoPlay Feature

AutoPlay is used to play a sequence of AVI files in any order, looping each AVI file as many times as desired, and looping the entire presentation. To bring up the **AutoPlay** Dialog Box, click on the **AutoPlay** icon.



THE AUTOPLAY ICON

AutoPlay Dialog Box



The **AutoPlay** dialog box lets you set up a multi-animation presentation.

Directory

Use the **Directory** section to move around your disk. Double-click to change directories and drives.

The **Change Directory** button is provided as an alternative to double-clicking with the mouse to change directories.

Files

Use the **Files** section to set up your AVI AutoPlay sequence.

All AVI files in the current directory will be listed in the **Files** section.

An **X** to the left of the filename means that the file will be included in the AutoPlay sequence. Click on the filename in the list to remove it from the AutoPlay sequence (the **X** disappears).

The number to the right of the AVI filename is the **loop count** for that file. It specifies how many times to play that particular AVI file before going on to the next one in the AutoPlay queue.

Use the **+** and **-** keys to increment and decrement an AVI file's loop count.

Use the **arrow buttons** at the right of the AVI file list to change the order of the AVI files in the AutoPlay queue. From top to bottom, the arrow buttons:

- 1) Move the selected file to the beginning of the AutoPlay queue.
- 2) Move the selected file one position up in the AutoPlay queue.

- 3) Move the selected file one position down in the AutoPlay queue.
- 4) Move the selected file to the bottom of the AutoPlay queue.

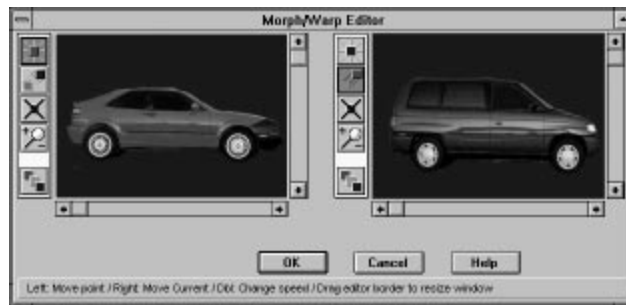
Select the **Continuous Looping** option if you wish the entire AutoPlay sequence to repeat until it is canceled.

The **Global Select/Deselect key** at bottom right sets the default for the entire AVI file list when it is first displayed. If you usually use only one or two AVI files in your AutoPlay sequence, you should set the default to **Deselect All Files**. If you usually use most of a directory's AVI files in your AutoPlay sequence, set the default to **Select All Files**.

Chapter 4: The Morph/Warp Editor

The Morph and Warp Editor

When you select **Morph** or **Warp** as your Filter and click on **Edit...** or on the right arrow, the Morph/Warp Filter Editor appears.



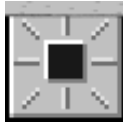
THE MORPH/WARP EDITOR

The loaded Start and End images are displayed. Each image's window has its own tool bar. The tool bars allow you to place *married pairs* of points on the two images. Each married pair of points represents a beginning and end location for the **Morph** or **Warp** operation to use when creating the final animation.

By default, when the Filter Editor is opened, the *Place Point* tool is activated in the Start image and the *Move Point* tool is activated in the End image.

The tool icons are as follows:

- ◆ Place Point



Allows you to place a point on a Start or End image by clicking with the left mouse button. When a point is placed on one image, a corresponding point is automatically placed on the other image and "married" to the first point. Over the course of the morph or warp animation, a point placed on the Start image will migrate to its married point's location on the End image.

- ◆ Move Point



Allows you to position the active point (red) in the active window (red outline) with the cursor or the arrow keys. The left mouse button lets you point and drag. The right mouse button acts as a "point magnet," grabbing the active point from its current location and moving it to the cursor's location. By double clicking on a point when this tool is selected, the movement speed of each point can be specified. This movement speed is a local version of the movement speed found under Clip Options.

- ◆ Delete Point



Allows you to delete a pair of points. Position the cursor over the point to be deleted and click with the left mouse button; or simply click with the right button, and the currently-active point, along with its partner, will be deleted.

When a point is deleted, its married point on the other image will *always* automatically be deleted. Thus, there are always the same number of points on each image, and every point is one of a pair.

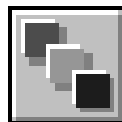
When you double-click on this tool a dialog box appears for erasing all the points in the given frame of animation.

- ◆ Zoom In/Out



Allows you to look at fine detail or the entire image. To zoom in, click with the left mouse button. To zoom out, hold the Shift key down and click with the left mouse button.

- ◆ Set Point Colors



Allows you to change the colors of morph/warp points from their default colors.

Placing Married Points on the Images

1. Click with the left mouse button in the Start image.

Since the *Place Point* tool is active, a red point will appear where you clicked. Red indicates that the point is currently active. You'll also note that the Start image has a red outline, indicating that it is the active image.

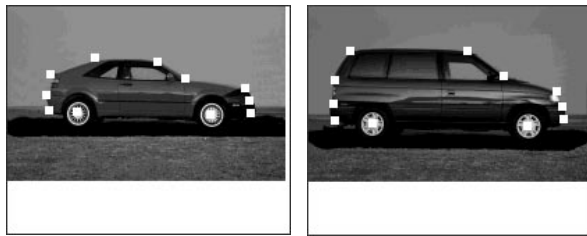
2. At the same time you place a point in the Start image, a corresponding red point will appear at the same location (same x y coordinates) in the End image.

3. Move the cursor over the End image to activate it (note the red outline), and position the married end point.

In this image, the *Move Point* tool is active (by default). Use the mouse to move the point on the End image to the desired final location (where you want the Start point to end up at the close of the animation).

4. Repeat steps 1 through 3 to place as many married point pairs as you wish.

The more point pairs you specify, the more precise the resulting **Morph** or **Warp** animation will be. (See Chapter 4 for discussion of advanced morphing techniques.)



IMAGES WITH MORPHING POINTS PLACED

Editing Shortcuts

- ◆ Selecting Points

As you add more point pairs, you'll note that the inactive points are blue and the active points are red. Use the Space bar to activate successive point pairs for ease in editing point locations.

- ◆ Moving Points

When the *Move Point* tool is selected, the right mouse button acts as a "point magnet," grabbing the active point from its current location and moving it to the current cursor location. This will save you the trouble of positioning the cursor exactly above the point you wish to move and then dragging.

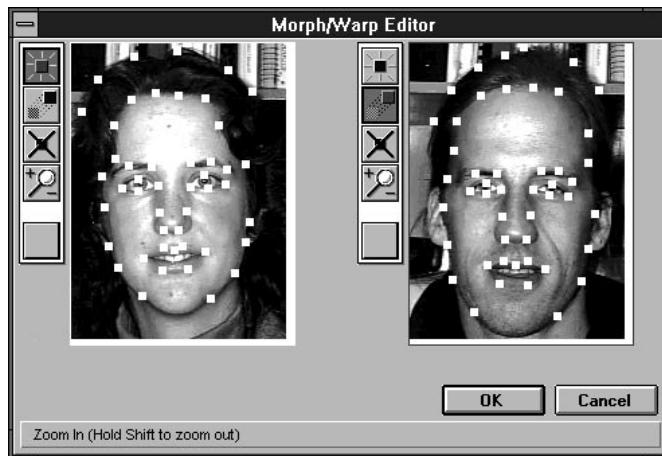
You may also use the arrow keys to move the selected point. The arrow keys will operate on the active point in the active image. The active point is red, and the active image is marked by a red outline around its window.

- ◆ Deleting Points

With the *Delete Point* tool activated, click with the right mouse button to delete the currently-active (red) point and its corresponding married point. This will save you the trouble of positioning the mouse directly above the point you wish to delete. Double clicking on the delete point tool allows you to delete all of the points in a frame

Point Placement in the Morph/ Warp Filter Editor

The importance of the placement of point pairs when creating morphs cannot be overemphasized. The strategic placement of point pairs is what lets **PhotoMorph** create the illusion of something inherently unbelievable actually happening before your eyes.



POSITIONING POINTS IN THE MORPH/WARP FILTER EDITOR

Features/Boundaries

The most basic rule for point placement is to attend to features and boundaries in the two images.

Think about each salient feature and boundary in the Start image. To where on the End image should it migrate over the course of the animation?

Imagine morphing a face into another face. Features you would need to bear in mind would include:

- ◆ Edges/outline of eyes
- ◆ Edges/outline of mouth

- ◆ Edges of nose
- ◆ Eyebrows
- ◆ Edge of hairline
- ◆ Ears
- ◆ Outside edge of head

Don't hesitate to place a lot of point pairs. In general, the more specific you are in showing **PhotoMorph** what is to happen in the animation, the more convincing it will be; and the speed of animation creation is not adversely affected by each additional pair of points.

Negative Space

Another consideration for making a morph look especially convincing is to add points to the *negative space*, or background, in the images.

If the background actually has features in it, you should attend to those especially carefully. Make sure they don't simply disappear and reappear (see **Ghosting** below). Ensure that the background's transformation is smooth and convincing, so that it does not detract from the foreground.

Ghosting

A tip-off that you need to work further on point placement in a morph is an effect called *ghosting*.

Ghosting occurs when a part of one object becomes transparent over the course of the animation. In ghosting, an area or feature disappears slowly and then reappears in the end image, instead of seeming to actually change into the new area or feature.

If you notice ghosting in your animation, you should add more points or position your points more carefully in the area where the ghosting occurs. Think about exactly where that area should migrate during the animation, and be very specific about placing points to define that migration.

Image Characteristics

Though any pair of images can be used to create a morph, some image characteristics tend to produce better or more convincing animations.

Object Placement in the Frame

The placement of the image within the frame is an important consideration. Be sure that the object you want to morph does not extend past the edge of the frame. If it does, you will never be able to control how that edge transforms.

However, if you do have an object that hangs off the edge that you want to use in a morph, you should use the **Image** menu to add a border to that edge of the image. Click on **Image/Frame**, and specify a frame along only that edge. Try to match the frame's color to the image's background color.

Same Image Size

A simple measure you should take to ensure good-looking morphs is to make the images used in your animations the same size.

When **PhotoMorph** creates an animation, it uses the *largest frame size in the entire animation* (all clips included) and scales all images in the animation to that size, no matter what their original size. This may produce unexpected effects and in some way lower the quality of the animation's appearance.

Though **PhotoMorph** does not *require* you to make the images the same size, in many instances you can improve the appearance of the animation by changing the images yourself before using them.

Use the **Image** menu to change the size of your images. There are various ways to change the size:

- ◆ **Scale** the image
- ◆ Add a **frame** of a certain width around the image to make it larger overall
- ◆ **Crop** the image

Object and Background Colors

The more similar the colors of the related objects or areas in the Start and End images of a clip, the more realistic-looking the change should look. If the colors are not the same shade, it helps if they are at least similar in luminance (both light, like yellow, pink, or sky blue, or both dark, like black, indigo, or brown).

Background color can be instrumental in making the morph look good. Similar background colors help. If they are not similar, it is best to have a *dark* background color. That way, if there is any ghosting or imprecision, it will tend to be less visible against the background.

Topology

Once again, similarity of object topology (general configuration) will help make the transformation look real. However, if the topology of the objects differs significantly, you will need to carefully plan how the dissimilar features will be dealt with.

Imagine morphing a frog into a chick.



You would have to consider dissimilarities like:

- ◆ Four legs vs two legs and two vestigial wings
- ◆ Nose vs beak

- ◆ Overall flat horizontal shape vs overall upright and round shape
- ◆ Large muscular legs vs small skinny legs

Possible solutions include:

- ◆ Place points so that the frog's front legs "atrophy" into the chick's body
- ◆ Shrink the edges of the frog's nose into the edges of the beak
- ◆ Carefully place a large number of points around the perimeter of the frog's flat body and the chick's round body to make sure the frog shape changes smoothly into the chick shape
- ◆ Place points around the edges of the frog's legs and make sure both sides migrate toward the center of the leg to form the chick's thin leg

AVI Files: Output File Type Quality

The **Quality** setting in the Output File Type/Setup dialog box (in the *Animate* parameters area of the Project Editor) affects the compression rate of AVI output files. This influences the quality of the animation at the time of compression.

The higher the compression rate, the lower the quality of the animation. As the compression rate is set higher, the frames will become progressively more blurry or chunky (pixellated). In general, a **Quality** setting of **75** will preserve a reasonably high animation quality and will produce pretty good compression.

Animation Quality setting

The **Quality** setting in the *Animate* parameters area affects the appearance of the animation and its frames. This setting influences the quality of the animation frames at the time of creation.

Depending on the images used in the particular animation, choosing High Quality may change the way your animation is created by using such techniques as anti-aliasing or a more sophisticated image processing algorithm.

Creating a Morph Clip

1. Load Start and End images into the Project Editor.
2. Choose **Morph** from the Filter Type list box.
3. Click on the **Edit...** button or on the right arrow between the Start and End images to access the Morph Filter Editor.
4. Use the tools in the tool bars next to the Start and End images to place point pairs on the images. The point pairs will control the metamorphosis which takes place in the Morph clip.
5. Use the Preview Window to browse through the clip, and make any needed changes with the Filter Editor.

6. Create an output animation file from your Morph clip by clicking on **Create Animation** in the Project Editor.

Creating a Warp Clip

Since the Warp Filter Type begins and ends with different version of the same image, only the Start image need be loaded. However, an End image may be loaded for use as a **reference image** (see below, **Tips on Positioning Warp Point Pairs**).

1. Load Start and/or End images for your Warp clip.
2. Choose **Warp** from the Filter Type list box.
3. Click on the **Edit...** button or on the right arrow between the Start and End images to access the Warp Filter Editor.
4. Use the tools in the tool bars next to the Start and End images to place point pairs on the images. The point pairs will control the metamorphosis which takes place in the Warp clip.
5. Use the Preview Window to browse through the clip, and make any needed changes with the Filter Editor.
6. Create an output animation file from your Warp clip by clicking on **Create Animation** in the Project Editor.

Tips on Positioning Warp Point Pairs

As in creating morph clips, a good rule of thumb to follow for a warp clip is to place points on *features* in the image or images.

As mentioned above, the Warp Filter Type begins and ends with different version of the same image, so only a Start image need be loaded. However, an End image may be loaded for use as a **reference image**.

A **reference image** can be used to reference end point locations.

As an example, imagine that you wanted to warp an image of your face into another version which has the geometry of Arnold Schwarzenegger's face. You would load the image of your face as the Start image, and load Arnold's face into the End image window. Then you would use the Warp Filter Editor to place points on the features of the faces, such as:

- ◆ Edges/outline of eyes
- ◆ Edges/outline of mouth
- ◆ Along the hairline
- ◆ Edges of nose
- ◆ Edges of ears
- ◆ Along the outside edge of the head

... and any other specific features which you want to make sure change in a specific way over the course of the warp.

When you create the warp animation, your original face will warp into another version which has the same configuration as Arnold's face. Note, though, that Arnold's face (since it was loaded in the End image window) never actually appears in the warp clip.

Motion Morphing

Motion Morphing is a feature that works with video clips. It is the same effect as single-frame morphing except that you can morph between two AVI video clips. Motion Morphing is automatically selected if either the Start or End image is an AVI file.

To perform a motion morph load two AVI files into the Project Editor, select Morph in the list of Filter Types, and click Edit. Motion morphing is different from single-frame morphing. If you are morphing an AVI with 30 frames then there are 30 frames that need morph points. With single frame morphing there were only two frames. If you are new to morphing and have not created any morphs of your own we recommend that you look over some single-frame morph examples (see list of example projects) before trying a motion morph.

The Basic Process

Place points on the important features in the first frame of the Start and End AVI clips. Use the bottom slider to advance to the final frame of the clip. Adjust the points to match the movement of the AVI files on the last frame of the Start and End AVI clips. Go back and adjust frames at infrequent intervals such as every 10 frames. Then start at the beginning and perform fine adjustments. When you are finished with point placement, you can adjust the color movement within a morph using the Project Editor/Option/Color Shift tool. You can also adjust the morph movement speed using the Option/Movement Speed tool. You can also create a morph which is a constant blend of the Start and End image instead of a dynamic transition from Start to End image. This is also found in the Option/Filter Percentage tool. Simply choose between Variable and Constant. Variable is the default and is most common for morphing.

Smart Points

The points that you add by hand are called Real Points and can be identified by their *default* color of light blue and light green. You can add a Real point anywhere in an AVI clip. PhotoMorph will duplicate that point by creating Smart Points on all following frames. Smart Points have a *default* color of dark blue if they have not been moved or adjusted, and are dark green if they have been moved. By creating Smart Points, PhotoMorph saves you the work of creating new points for each frame. This lets you concentrate on the important task of adjusting and fine tuning the placement of points. By doing adjustments every 10 frames or so you can make use of the automatic adjustments of the Smart Points. The Smart Points between the Real points will always the adjustments to the Real Points.

When you delete a Real Point or a Smart Point, all corresponding points after that point will be deleted but no points before it will be deleted. If you have a sequence in a motion morph that has a lot of movement you may wish to add extra points just for that section. You can add Real Points,

adjust the Smart Points for several frames, and delete the Smart Points after that sequence where they are not needed.

Helpful Advice

Because motion morphing uses AVI clips, the images you use will almost always be relatively small. To help you achieve best placement of morph points you should use the zoom tool to zoom in on a clip when placing points. Also, because motion morphing takes more time than single frame morphing you may wish to create a test morph with just a few points before spending a lot of time on a project. This process of gradual refinement is very good for starting with a rough idea and gradually perfecting it.

Motion Warping

Motion Warping is the same effect as single-frame warping except that you can warp all or some of the frames of a moving video clip. Motion Warping is automatically selected if you place an AVI clip in the Start image of the Project Editor and choose Warp from the list of Filter types.

Smart Points

The amount of effort to create a motion warp is a bit more than is needed to create a single-frame warp. If you are warping a clip with 30 frames, there are 30 frames that need warping points. Rather than make you recreate 30 frames of warping points, we have added Smart Points to help you get the job done. The process to create a motion warp is the same as creating a single-frame warp (see the manual section on Warping) but with one additional step.

First, click on Edit in the Project Editor to bring up the Morph/Warp Editor. Set your starting warp points in the first frame of your warp clip. These points that you create by hand are called Real Points. PhotoMorph will create Smart Points on all following frames automatically, saving you a lot of work. You can add Real Points to any frame anywhere in a video clip, and Smart Points will be created automatically.

Helpful Advice

If you delete a Real Point or a Smart Point, only the points on following frames will be deleted. You will find that most of the effort of a motion warp is in adjusting the Smart Points so that a smooth motion is created. This is very important since video images tend to move on each frame. In order for a motion warp to look good, the points should be moving on each frame. Again, PhotoMorph has several features to make your work easier. All points are color coded to help you organize your work. Colors can be assigned to the following kinds of points: Active Real Point, Active Smart Point, Moved Real Point, Moved Smart Point, Unmoved Real Point, and Unmoved Smart Point. For images that have a color that conflicts or obscures the points you can easily change the color of that point type to be something else using the point color tool.

Chapter 5: The Colorize Editor

Colorizing Video Clips

The Colorize features in PhotoMorph allow you to apply 18 filter effects directly to images and AVI video clips. You can use the Old Movie filter to make any video clip look like an old black and white movie. You can use the Contrast filter to add or decrease the contrast of a video clip as you would with a TV set.

To access the Dynamic Video Effects, place a video clip into the Start image of the Project Editor and select Colorize from the Filter Type list. You can select from 18 different colorize filters and you will have an immediate preview of how that effect looks on your video clip. You can use the slider bar to preview the effect in various parts of the video clips, from start to finish.

For the Colorize effects which have slider controls in them such as Contrast, Noise, Trace Edges, you can adjust the amount of very precisely.



THE COLORIZE EDITOR

The Options button, which is next to the Edit Button in the Project Editor allows you to specify how you wish the Colorize effects to be applied. You can have an effect hold at a certain percentage from 0 to 100% or you can have the effect gradually increasing throughout the clip. The Filter Percentage options, Variable and Constant, allow you to do this. If you specify Variable for a Colorize filter, the effect will start at zero at the first frame and will reach 100% on the frame that is specified in the Frames counter in the Project Editor. If you specify Constant, the effect will hold at that percentage throughout the clip.

It is important to know the difference between the Colorize filters and the effects found in the Filters menu. The effects are the same except that the Filters menu will work only on a bitmap to create another bitmap.

These Colorize effects can be used in combination with other filter types to create truly amazing results. For instance all Colorize, and Filter menu effects for that matter, work with

alpha channel images. The filters will colorize the parts of the image that have Alpha values of off but not where the values are on. This means that you can selectively colorize only certain parts of the image.

It is also useful to know that you can use several Colorize filters in a single clip. You can boost the contrast of a clip with the Contrast filter, you can then use the Blur filter, and finally you can apply the Old Movie filter. You can do all this in a single clip using the multiple filters. See Chapter 9 (Advanced Topics).

Chapter 6: The Distortion Editor

The Distortion Filter

Video Distortions

The PhotoMorph Video Distortions are a great way to add truly funky effects to any video clip or bitmap. The Video Distortions can be found in the Project Editor in the Filter Type list under Distortions. There are 22 distortions to choose from, each can be rendered in low, medium, and high quality. High quality is recommended for studio and broadcast videos. Click on the Animation Parameters icon to access the Quality value in the Project Editor.

Several distortions can be combined in a single clip to create some really amazing effects. For example, the Rotation and Zoom In effects can be combined to create a spinning and growing effect. Rotation can be combined with Ripple and Alpha Channel images to make some really mind blowing pictures.

To choose a **Distort** filter effect, click on the **Edit...** button or on the right-pointing arrow between the Start and End image windows in the Project Editor. A list of 22 different distort effects is displayed. (A graphic index of these effects is shown in the next section.)

The **Distort** filter can be used with either one image (load only a Start image) or two images (load Start and End images).

The **Start** and **End percentages** control when the **Distort** clip will begin and end recording to the output file.

If two images are being used, controls are provided for specifying different phases of the animation: **Source**, **Merge**, and **Destination**. These controls allow sophisticated transition effects to be achieved.

Controls are also available for dictating the direction of the distortion: **Forward** (undistorted image => distorted image) or **Reverse** (distorted image => undistorted image).

Each of the **Distort** filter controls and options are described fully in the following pages. **NOTE:** Filter effect names followed by a **[F]** are particularly computationally intensive and will be slow on machines without a floating point coprocessor.

All distortion filters can be rendered at each of three speed and quality settings: Low, Medium, and High. Low quality renders four times faster than Medium, and 16 times faster than High quality. Low quality is best suited to storyboarding and idea testing. High quality gives substantially better image detail and is best suited for a final render. The quality settings can be found in the Project Editor Animation Parameters.

Index of Distort Effects



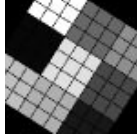
Lens [F]



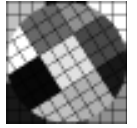
Pinch



Ripple [F]



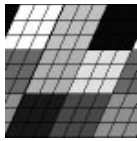
Rotate



Rotate Center



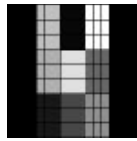
Rotate and Shear



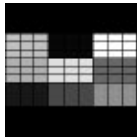
Shear



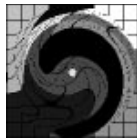
Spherize [F]



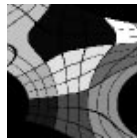
Comp. Width



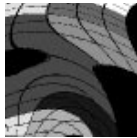
Comp. Height



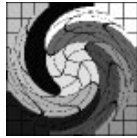
Swirl [F]



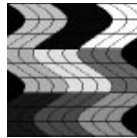
Tear



Tumble [F]



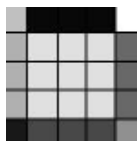
Twirl [F]



Wave



Zigzag

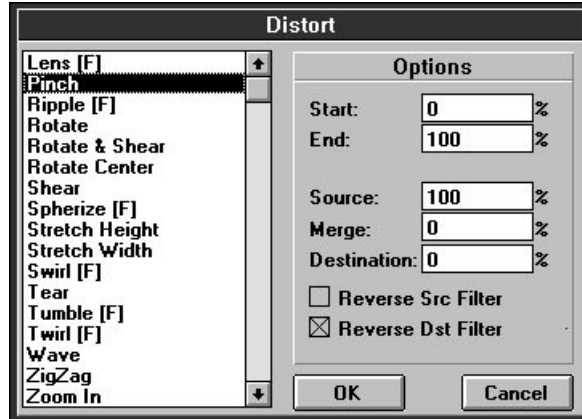


Zoom In



Zoom Out

Distort Filter Controls



Start and End Percentages

Use the **START** percentage to specify when to start recording the animation to the output file. For example, setting a start percentage of 20% means that the first 20% of the clip's total animation will be skipped and only 20% through 100% will be recorded to the output file.

Use the **END** percentage to specify when to stop recording the animation to the output file. For example, setting an end percentage of 80% means that 0% through 80% of the animation will be recorded to the output file, and 80% through 100% will be skipped.

Source/Merge/Destination Percentages

NOTE: If you are interested in creating a **Distort** clip in which only one image is distorted over the course of the clip (in other words, the **Distort** clip is not being used as a transition between two distorted images), then this section may be skipped. In this case, you will load only a Start image, and the Source, Merge, and Destination fields will be disabled.

Use the **SOURCE** percentage to specify how much of the animation should use only the start image, without merging in any of the destination image.

Use the **MERGE** percentage to specify how much of the animation should merge the start and end images. In the MERGE portion of the animation, the frames are created by merging information from the Start and End images, beginning with the distorted state of each of the two images at the beginning of the merge. The result is a transformation from the distorted start image to the distorted end image.

The amount of each image that will contribute to the final frame is set according to the percentage through the merge phase of the rendering. At the start of the merge phase, the source image will contribute 100% to the final frame and the destination image will contribute 0%. Half way through the merge phase, the source image will contribute 50% and the destination image will contribute 50%. At the end of the

merge phase, the source image will contribute 0% and the destination image will contribute 100%.

Use the **DESTINATION** percentage to specify how much of the animation should include only the end image without merging in any of the start image.

The Reverse Checkboxes

A **Distort** filter effect can either be run forwards or backwards. In this case, *forwards* means from undistorted (unfiltered) to fully distorted (filtered), and *backwards* means fully distorted to undistorted.

The **Reverse Start Filter** and **Reverse End Filter** boxes are used to specify the direction of the distortion for each image over the course of the animation.

Reverse Start Filter box unchecked: The start image will be filtered forwards (No Distort => Full Distort).

Reverse Start Filter box checked: The start image will be filtered backwards (Full Distort => No Distort).

Reverse End Filter box unchecked: The end image will be filtered forwards (No Distort => Full Distort).

Reverse End Filter box checked: The end image will be filtered backwards (Full Distort => No Distort).

Phases of Rendering

The following table will clarify how the different phases of a **Distort** clip are created.

<u>From</u>	<u>=></u>	<u>To</u>	<u>Phase of Distort Clip</u>
0 %	=>	Start %	Skip this section when writing animation output file
Start %	=>	Source %	Filter only the Start image
Source %	=>	Merge %	Filter both Start and End images in specified direction (Forward or Reverse), and merge results
Merge %	=>	End %	Filter only the End image
End %	=>	100 %	Skip this section when writing animation output file

Examples

Following are some examples of **Distort** clip setups, with explanations of the results.

Example 1:

A Start image is loaded in the Project Editor. No End image is loaded. The **Distort** options are set as follows:

Start: 0%

End: 100%

(Source: 100% - This option is grayed out and set to 100% when only a Start image is loaded.)

Reverse Start Filter: OFF

Result: 100% of clip is rendered using a forward filter on the Start image.

Why? The Start percentage is set to 0, so the clip is written to the output file from 0% (the beginning). The End percentage is set to 100, so the output file ends when 100% of the clip is written. The Reverse Start Filter box is not selected, so the filter runs in a forward direction.

Example 2:

Start and End images are loaded in the Project Editor. The **Distort** options are set as follows:

Start: 0%

End: 100%

Source: 0%

Merge: 0%

Destination: 100%

Reverse Start Filter: OFF

Reverse End Filter: ON

Result: 100% of clip is rendered, using a Reverse filter on the End image.

Why? The Start percentage is 0 and the End percentage is 100, so the entire clip is written to the output file. The Source percentage is set to 0, so 0% (none) of the Start (Source) image is used during the clip. The Merge percentage is set to 0, so none of the clip merges the two images. The Destination percentage is set to 100, so the Destination (End) image contributes 100% of the information used in the clip. Since the Reverse End Filter box is selected, the Destination image is filtered in reverse.

Example 3:

Start and End images are loaded in the Project Editor. The **Distort** options are set as follows:

Start: 20%

End: 95%

Source: 80%

Merge: 0%

Destination: 20%

Reverse Start Filter: OFF
Reverse End Filter: ON

Result: The output file skips the first 20% of the clip. The first 80% of the clip is rendered using a forward filter on the Start image, and then the final 20% of the clip is rendered using a reverse filter on the End image. The output file skips the final 5% of the clip.

Why? The Start percentage is set to 20, so the recording of the clip to the output file will start after 20% has gone by. The End percentage is set to 95, so the final 5% of the clip will not be recorded to the output file. The Source percentage is set to 80, so the first 80% of the clip uses only information from the Source (Start) image. The Merge percentage is set to 0, so none of the clip merges the two images. The Destination percentage is set to 20, so the final 20% of the clip uses only information from the Destination (End) image. The Source image is filtered forward, since the Reverse Start Filter box is not selected. The Destination image is filtered in reverse, since the Reverse End Filter box is selected.

Example 4:

Start and End images are loaded in the Project Editor. The **Distort** options are set as follows:

Start: 0%
End: 100%
Source: 33%
Merge: 34%
Destination: 33%
Reverse Start Filter: OFF
Reverse End Filter: ON

Result: The entire clip is recorded to the output file. 33% of the clip is rendered using a forward filter on the Start image; then 34% is rendered using a forward filter on the Start image merged with a reverse filter on the End image; then 33% is rendered using a reverse filter on the End image.

Why? Start and End percentages are set to 0 and 100 respectively, so the entire clip is written. The Source percentage is set to 33, so the first 33% of the clip uses information from the Start (Source) image. The Merge percentage is set to 34, so the next 34% of the clip merges information from the Start and End (Source and Destination) images. The Destination percentage is set to 33, so the final 33% of the clip uses only information from the End (Destination) image. The Reverse Start Filter box is not selected, so the Start image is filtered forward. The Reverse End Filter box is selected, so the End image is filtered in reverse. A diagram is shown below:

Creating a Distort Clip

1. Load an image into the Start image window, or into both the Start and End image windows.

2. Choose ***Distort*** from the Filter Type list box.
3. Click on the **Edit...** button or on the right arrow between the Start and End images to access the Distort Filter Editor.
4. Choose the desired effect from the Distort effect list by clicking with the mouse.
5. Use the **Start %** to specify when the animation is to begin recording to the output file. Use **End %** to specify when the animation is to end recording to the output file. If using Start and End images, use **Source, Merge,** and **Destination percentages** to specify how to blend the two images.
6. Use the Preview Window to browse through the clip, and make any needed changes with the Filter Editor.
7. Create an output animation file from your Distort clip by clicking on **Create Animation** in the Project Editor.

Chapter 7: The Overlay Editor

Color Keying, Alpha Channel, and Text Overlay

Color Keying

The **Chroma Key**, **Blue Screen**, and **Luminance Key** effects are a family of similar effects. Each effect will allow you to select a range of colors or brightness values and make those colors transparent to a background image. In other words, those colors in the Start image become transparent and the End image shows through. Blue Screen is the most commonly used effect. It is widely used in television and films. Typically, an actor is filmed against a blue background. The film editing process removes the blue background and substitutes in an exciting picture like a view over a cliff. The actor wasn't filmed hanging over a cliff, the editing process made it look that way. PhotoMorph can do exactly the same effect using the three color keying effects. The differences in the three effects are listed:

Chroma Key allows you to 'key' on, or select any color.

Blue Screen allows you to key on a range of only blue colors and pass through shadows.

Luminance Key allows you to key on a range of luminance values, or brightness values instead of colors.

The color key features in PhotoMorph are extremely powerful and very flexible. It is possible to blue screen an AVI clip onto another AVI clip. This means that you could have a moving actor blue screened onto a moving background. You can also mix still bitmaps with video clips, and don't forget that by using multiple layers of effects in a single clip you can composite four scenes with any three filter effects. It is possible to use all three color key effects in the same clip. See the section on Multiple Layers.

Each of the color key effects is found in the Overlay filter in the Project Editor.



THE OVERLAY EDITOR

Blue Screening

The **Blue Screen** effect works only with blue colors. Three controls are available to adjust the key values of the blue color. That is, which shades of blue become transparent. The **Lightness** control allows you to set the lightest value of blue to become transparent and the **Darkness** control allows you to set the darkest value to become transparent. These controls allow you to set a light point and a dark point. Any shades of blue between these points become invisible. Any shades outside these values will remain visible in the resulting image of the Start and End images. The **Shadow** control allows a shadow in the blue screen to pass through and become a shadow in the resulting overlay. There must be a shadow in the blue color on the blue screen for this to function.

Chroma Keying

The **Chroma Key** effect is more powerful than the Blue Screen effect because it can key on any color including blue. It is a more general purpose tool and can do anything the Blue Screen effect can except transfer a shadow. Because it can do more things the controls are a little different. The biggest difference is the addition of the **Eyedropper** tool. This tool allows you to sample a key color in either the Start or End image. To use the eyedropper to select a color key you simply click on a part of the image. Once you have sampled this color you can adjust it further with the other controls. The **Chroma** tool allows you to select the key color manually. The color is displayed in the slider. If you do not have a video card with at least 32,000 colors, Windows will try to approximate the true color with the limited colors available. The **Tolerance** control allows you to adjust the range of the colors to key on. If the tolerance is set to very small, or all the way left, only a single color value can become transparent. If the tolerance level is very large, or all the way to the right, all colors can pass through and the complete Starting image will be transparent. The **Darkness** tool will also adjust the range of colors that are key colors.

Luminance Keying

The **Luminance Key** effect allows you to key on a range of luminance values, or brightness, instead of actual colors. This is especially useful for keying on white, black, and shades of gray. It is also good for keying on pictures that have several colors of the same luminance. The **Eyedropper** tool will allow you to automatically select a starting luminance directly from an image. The **Minimum** control will set the darkest luminance value. The **Maximum** control will set the brightest luminance value. When you have selected the eyedropper, you can use the left mouse button to select the minimum value and the right mouse button to select the maximum value.

When using color keying filters, the Start and End image must be the same size.

Alpha Channel

The Alpha Channel effect is found in the Overlay filter. Alpha channel images can be used to create very interesting see-through and semitransparent image effects. An alpha channel image is simply a 24-bit image with extra information, called a channel. The alpha channel uses 8 bits of information and so an alpha channel image is also called a 32-bit image. That channel determines the transparency of that image with respect to another image. The alpha channel specifies 256 levels of

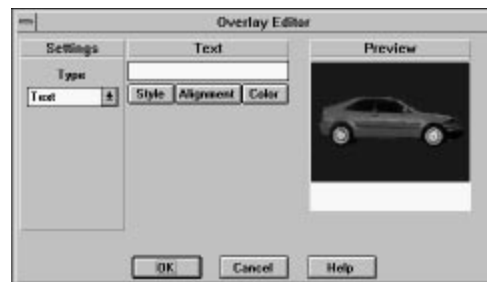
transparency varying from completely transparent to completely opaque. An alpha channel image with the alpha channel set completely off would look exactly like a normal image. An alpha channel set completely on would be completely transparent to its background image. The trick to using alpha channels is to decide what becomes transparent.

Alpha channel images can be created in PhotoMorph using the Color/32-bit tool with the Image/Mask tool.

Alpha Channel images can also be created and imported from applications such as Photoshop, PhotoStyler, and 3D Studio. The TIFF, Targa, and BMP formats support 32-bit images and can be used to import and export the images. If an image has an alpha channel it will be listed as a 32-bit image in the Local information bar and in the Colors menu. Any 32-bit image can be converted into a standard image using the Colors menu. When an alpha channel image is loaded the alpha channel will be displayed as stripes (by default) on the image. The stripes will help you identify the nature of the alpha channel, and the striping can be customized in the File/Settings menu. The support for alpha channel operations in PhotoMorph is extensive. All operations in the Image menu and in the Filters menu have special functions for alpha channel images. For instance the Filter's operations will only change the parts of an image that are opaque to another image. If the channel blocks the background image then the filter acts on it. For a complete tutorial and explanation of alpha channels see Chapter 9 (Advanced Topics).

Text Overlay

The Text Overlay feature in PhotoMorph allows titling of both video clips and bitmaps with TrueType and PostScript fonts. Fonts color can be any of 16 Million colors available. The interface allows real-time color changing, and font adjustment on the screen.



THE TEXT OVERLAY EDITOR

To access the Text Overlay tool, place a video clip or bitmap in the Start image of the Project Editor, remove any image in the End position. Select the Overlay filter and click on Edit. The Text filter appears with the Style, Alignment, Color and Text box options. The Style option allows you to choose from any installed font styles and sizes. The Alignment option allows you to position your text at one of several preset areas on the image. It also allows you to choose between right justification, centered, or left justification. The Color option allows you to select the color of your image. If you are overlaying onto a 24-bit image you will have 16 Million colors available. If your image has less colors then you will have that number of colors for your text. The Text box is where you type in the text that you wish to appear on the image. The text overlay will update the image with each keystroke. Text length is limited to one line of text and a carriage return cannot be included in the text string.

Some forms of video compression can make overlaid text appear fuzzy, smudged, or streaky. This is often the case with Indeo compression. If your text looks fuzzy when you play it back as an AVI file try recompressing using Cinepak or Video1.

Text overlay can be used to create some very interesting clips when used with other PhotoMorph effects. For instance, you can overlay blue text onto a video clip or bitmap and use the Blue Screen effect to make each letter invisible to a video clip that plays behind each letter. You can get very fancy with this effect by using the Distortion effects such as Zoom In, Zoom Out, and Rotate on the text. You can also create a tilted text effect by first rotating the bitmap, overlaying the text, rotating the bitmap back, and then cropping it to its original size. Always use high quality rotation to preserve the image and text quality.

The Text Overlay tool is available when only one image is selected in the Project Editor.

Chapter 8: The Transition Editor

The Transition Editor

The PhotoMorph Transition Editor provides more than 256,000 combinations of video transitions. The Transition Editor is a menu driven dialog box which gives you the ability to apply transitions to both the Start clip and End clip. It also lets you add Faders to each transition as well as add color modifiers. All these effects work with any combination of video clips and bitmaps. The Transition Editor may be freely combined with any other PhotoMorph filter combinations as long as the images sizes remain consistent.



THE TRANSITION EDITOR

The Transition Editor is found in the Project Editor in the list of Filter Types. It is the Transition list item. Click on Edit to bring up the Transition Editor.

Direction Arrows

The heart of the Transition Editor lies in the **Direction Arrow** buttons. The Direction Arrows specify the direction that the clip will move as time passes. The left set of arrows control the transition direction for the Start clip, the right set of arrows control the direction of the End clip. For the Start clip, If only the 'up' arrow is specified for the End clip, the whole clip will move up. If both the up and down arrow are specified, the clip will break into two pieces. The top half will transition up and the bottom half will transition down. This is the general method for all of the Direction Arrows. If you specify all eight direction arrows for a video clip, the clip will break into eight pieces and each will transition off of the screen in a radial direction outward. The arrows work the same for the End clip on the right hand side except that the clip move from outwards to inwards.

The Faders

The **Faders** are additional effects that can be added to the incoming and outgoing transitions. In order, the Faders are **Alpha**, **Fade**, **Melt**, **Random**, **Reverse Fade**, and **Solid**.

Choosing **Solid** is the same as not choosing any fader.

The **Fade** fader causes a gradual and continuous color change to occur during the transition. It is the same as a dissolve.

The **Reverse Fade** causes the fade to operate backwards. This is often used with one image to fade from a solid color to the image.

Melt causes a luminance key to occur between the Start and End clips whereby the lighter parts of the image fade in first followed by the darker parts of the image.

Random adds randomly placed speckles of color. These speckles will either be the selected background color, or will be the color of the image beneath it depending on the transition.

The **Alpha** fader is a very powerful feature and can produce wonderful transitions. The Alpha fader is used on 32-bit start images to cause the opaque part of the image to fade before the transparent part. Using this technique you can design your own transitions (checkerboards, gradient, circular, etc.). To use the Alpha channel fader it is necessary to select Alpha for both the Start and End image faders. The Start image must be a 32-bit image. For a discussion and explanation of Alpha channel images refer to the manual section on Alpha Channel or to Chapter 9 (Advanced Topics)

The Background Color

The **Background Color** option allows you to choose background colors for transitions. These colors will also modulate some of the Faders. For instance, if you choose a background color of green and choose Random as a fader for a transition, the random speckles of color will appear green. If you choose Fade, the image will fade from a shade of green into the incoming image.

The Transition List

The **Transition List** on the leftmost side of the Transition Editor lists the names of the most commonly used transitions. To use a particular transition that is listed simply choose your two clips and select a transition from the list.

Creating a Transition Clip

The Transition Filter Type provides effects which are commonly used to begin an animation, end an animation, or segue from one animation section to another.

Some transition effects require only one image to be loaded, whereas others need two, a Start and an End.

1. Load an image into the Start image window and an image into the End window.
2. Choose ***Transition*** from the Filter Type list box.
3. Click on the **Edit...** button or on the right arrow between the Start and End images to access the Transition Filter Editor.
4. Choose the desired effect from the Transition list by clicking with the mouse and then click on OK.
5. Use the Preview Window to browse through the clip, and make any needed changes with the Filter Editor.
6. Create an output animation file from your Transition clip by clicking on ***Create Animation*** in the Project Editor.

Chapter 9: Advanced Topics

This section is devoted to some of the advanced features of *PhotoMorph*. Although these features may appear intimidating at first, we have attempted to make each feature extremely powerful, while maintaining a straightforward, easy-to-use interface.

Multiple Filters

What are Filter Layers?

Imagine a composer working on a piece of music for three very talented musicians. Although each musician can play only one instrument at a time, each musician can play any of five different instruments. Because each musician is an accomplished soloist, there will be portions of the piece of music that the composer will want only one musician to play. There will be other sections, however, in which the composer may wish to have a duet, or even all three musicians playing at once.

Remember that each musician can play any of five instruments. Thus, the composer could have a section of music during which three trumpets play, then have another section in which the orchestration calls for flute, tuba, and bagpipe. Or he could have an electric guitar solo. This composer has many possibilities.

Think of each *PhotoMorph* effect (Colorize, Distort, Morph, Overlay, Transition and Warp) as one of the five instruments, the three filter layers as the three musicians, and yourself as the composer. Just as the composer would use different instrument combinations to create various musical textures, you can use different filter combinations to create various special effects. You have many possibilities.

Basic Examples and Applications

Changing Filters

Switching between filter layers is very easy. Next to the filter type in the Project Editor is a button labeled [123]. This button acts as a toggle between the three layers. The currently-selected filter is highlighted in red. The second and third filters default to <<No Filter>>.

A simple example

Load a Start image. Set the filter type for the first layer to Colorize and click on Edit. Emboss will be the default filter. Slide the preview slider in the Colorize Editor to see how the resulting animation will appear. The clip will start with the original image, and change to an embossed image. Since this is the desired result for our example, press OK.

Press [123] to advance to the second filter. The Start image will default to <<Filter 1>>. Remember that the first layer is creating a dynamic emboss. Suppose we want to slide the image to the left as it

embosses. Select Transition as the filter type and press Edit. Select Slide Left from the transition list and press OK.

Now open the Preview Window and slide the Percentage slider. You will see that the clip starts with the original image, and as the image is being embossed, it slides to the left. If you click on Create Animation, you can see the finished video clip.

This simple combination illustrates multi-layered filters very clearly. The second filter is layered atop the first. We can go another step and layer a third filter atop the first and second. We leave this as an exercise to the reader. (Hint: Try setting filter layer 3 in the above example to a Rotate distortion.)

It is important to note that although the result of the previous filter defaults to being the Start image, it can be used as the End image, as both the Start and End images, or not at all. In most cases the Start image default will be the most useful. Not using it at all may not appear terribly exciting, but as you'll see below, in the section on Clip Options, previous filters can be used to create dynamic Alpha Channel Masks.

Alpha Channels and Masking

What are Alpha Channels?

Imagine looking through a stained glass window. Light shines through some areas of the window, yet no light shines through other areas. One could say that certain portions of the window are transparent, where light clearly shines through. Other portions are opaque, and no light shines through.

With **PhotoMorph**, one can construct a stained glass window atop any image or video clip. This window is known as an **Alpha Channel**. With an alpha channel one can control exactly which areas of an image become transparent when a second image is superimposed upon it.

Basic Examples and Applications

Increase to 32-Bit, The Difference between Opaque and Transparent

Try this example: Minimize or hide any Editor Window. Load an image, then click on the image. The **Colors** menu should appear. Under 32-Bit there are two options: Increase to 32-Bit (Opaque) and Increase to 32-Bit (Transparent). Choosing one of these options adds an alpha channel to the image. An **Opaque Alpha Channel** has no transparency, and therefore nothing will shine through the image. With a **Transparent Alpha Channel**, the image becomes completely clear, and when a second image is overlaid, the first image will disappear.

By default, **PhotoMorph** "stripes" areas that are transparent. Thus, by selecting Increase to 32-Bit (Transparent) the entire image becomes striped. When Increase to 32-Bit (Opaque) is chosen, the image does not become striped because no area of the image is transparent. The way alpha channels are displayed on images can be specified under the File/Settings menu item. See Chapter 1 for more information.

32-bit images are said to contain alpha channel information. Only a few file formats can save this information: .BMP, .DIB, .TGA, and .TIF. Refer to the section on **File/Save As** for more information on saving 32-bit image files.

Image... Mask

Once an image has been designated as a 32-bit image, the Mask option under the **Image** menu becomes very useful. Masks can be used to create basic transparencies on an image.

Try this: Using the steps outlined above, load an image and increase it to be 32-Bit Transparent. This should result in the image's becoming completely transparent, which is indicated by the striping. Next, select Mask from the **Image** menu. The following dialog box will appear:



THE MASK IMAGE DIALOG BOX

On the left is a list of preset masks. On the right, the currently-selected mask appears. There are three options that can be selected: Invert Mask, Mask Alpha Channel, and Mask Color Channel. For our example, select the Star mask. Ensure that Invert Mask is *de-selected*, Mask Alpha Channel is *selected*, and Mask Color Channel is *de-selected*. Click OK and look at the resulting image.

You will notice that the transparency, indicated by the striping, now takes the shape of the star. If you had selected Invert Mask, the opaque area of the image would be the *interior* of the star, and the *exterior* of the star would be transparent. Masking the Color Channel applies the mask to the image itself.

Colorize

Now the part you've been waiting for; how to use alpha channels. We'll start with the Colorize filter.

Take the image created above, in which the star mask was used to create an image with some transparent portions and some opaque portions. Load this image as the Start image in the Project Editor. For your filter, choose Colorize and click Edit.

You will notice that Emboss is the default effect. In the Preview Window, you will note that the effect is only being applied to the *opaque* areas of the image. The *transparent* areas (the areas that are striped) are not affected by the Emboss filter.

Even with this simple example, the power of alpha channels is illustrated. Portions of images can be masked out, so that specific areas of an image can be left unchanged.

Transitions

With an alpha channel, one can create one's own transition fader. Use the same star image in the above examples as the Start image. Load an image that is of the same dimensions as the End image. Select Transition as your filter and click Edit.

The Transition Editor knows that the Start image contains an alpha channel and thus provides a fader under both images labeled Alpha. Select the Alpha Fader under both images. Click OK and preview the animation. As you slide the Preview percentage, you will see that the transparent areas fade between images first, then the opaque areas fade.

This simple example may not appear terribly exciting; however, since **PhotoMorph** can use any image or .AVI file as an alpha channel mask, one can create an infinite variety of faders. See the section in Chapter 3 on Clip Options for more details. For a fun project in the meanwhile, try doing the same effect but instead of using the star to generate the Alpha Mask, use checkers.

Alpha Channel Overlays

When using the Overlay Editor with a Start image containing an alpha channel, two more overlay types appear; **Alpha** and **Inv. (Inverse) Alpha**. These are used to provide control over the areas to be overlaid.

Alpha & Inverse Alpha

Load the star alpha channel image used previously into the Start image window of the Project Editor. Load a second image of the same size into the End image window. Select Overlay as your filter type and click Edit. Choose Alpha from the Type list.

You will see that the End image shines through the Start image in the shaded, transparent area. In the opaque area, the Start image shows. To reverse this, choose Inv. Alpha. This way, the area that is transparent become opaque, and the opaque areas become transparent.

Slider Explanation

You will notice two (or three as explained below) sliders for alpha channel control. The first is labeled Pre-Alpha Fader. This slider controls the fade of areas that are not controlled by the Start image's alpha channel. Sliding the control to the left increases the Start image's transparency; all the way left is equivalent to 100% transparency.

The second and third sliders control the alpha channel of the resulting clip - this Overlay's output. These two sliders are useful when alpha channels need to be reused in multi-layer clips. Precise control of the resulting alpha channel is possible.

The second slider, labeled Output Start Alpha, controls the amount of transparency applied to the resultant clip, based upon the Start image's alpha channel. When the slider is placed all the way to the left, the resultant image is 100% transparent. With the slider set to the right, the resultant image will have the alpha channel from the Start image applied. Varying degrees of resultant transparencies can thus be achieved by adjusting the slider.

When the End image has an alpha channel, a third slider appears: Output End Alpha. This slider controls the amount of transparency applied to the resultant clip, based upon the End image's alpha channel. When the slider is placed all the way to the left, the resultant image's alpha channel is that of the Start image. With the slider set to the right, the resultant image has the alpha channel from the

End image combined with that of the Start image such that the opaque areas of both alpha channels are combined. Varying degrees of resultant transparencies can be achieved by adjusting the slider. To use the alpha channel of the End image alone, set the Output Start Alpha slider to the left, and the Output End Alpha slider to the right.

Varying the Transparency levels

Up to this point, we have only used basic alpha channels; the area is opaque, or its transparent - there is no "middle ground". Well, there can be! As there are shades of gray between black and white, there is a gradient between transparency and opacity. Since **PhotoMorph** reads and uses 32-bit images created with PhotoShop, PhotoStyler, and 3D-Studio, users of those programs can already reap the benefits of alpha channels without further instruction; simply load those images and use them as you did the images in the above examples.

Some of us, however, aren't so fortunate. That's why **PhotoMorph** allows anyone to use any image as a dynamic mask. Read on...

Dynamic Masks

Through the use of the clip options, any image, any .AVI file, and even the previous filter can be used to create alpha channels.

Other Images

Load Start and End images that are the same size but do not contain alpha channel information. Select Overlay as your filter type. Press Options.

The whole of this screen is described elsewhere; however, we're going to cover **dynamic masking** here. Under Alpha Masks (lower left hand corner of the window) you will notice places for Start and End images. Familiar Load Image File icons appear next to each name. In a nutshell, one can specify another image to provide the alpha channel in varying degrees of transparency.

Let's continue this example, and then explain what's going on. Under Start choose any image (if need be, load an image using the Load Image icon next to Start). Click on OK then click Edit in the Project Editor. The Overlay Editor should appear. Select Alpha from the list.

The resulting preview might surprise you. The Start and End images are superimposed upon each other; the amount of transparency being determined by the colors of the image used as the mask.

For example: Suppose we had used a monochrome (black and white) image as our Alpha Mask. If we had, the black areas in the image would indicate transparent spots, and the white areas would indicate opaque spots. If the masking image had been a grayscale image, the black areas would be used to make transparent areas. The white portions would be used to create opaque areas. The shades of gray would be used to create varying transparency levels (the darker the gray level, the more transparent the area, and vice versa).

Because we used a color image in our example, **PhotoMorph** treated it as a grayscale image. Thus, you will notice that where the masking image is *dark* in color, the End image shines through. Where the masking image is *light* in color, the Start image shines through. Remember, black or dark makes for a transparent area, and white or light makes for an opaque area.

AVI Files

Because **PhotoMorph** can treat .AVI video clips in the same way it treats still images, one can create *moving alpha channels*. When a video clip is loaded into the Start or End mask section of the Clip Options, the Video Editing Options dialog is enabled for the masking .AVI. Just like in the Project Editor, in and out points as well as sampling options can be specified. Consult the section on Video Editing Options elsewhere in this manual.

When a video clip is used as a mask, it is similar to using a color image, except the image changes over time. Where the video clip is dark in color, the End image shines through. Where the video clip is light in color, the Start image shines through. As with images, black or dark makes for a transparent area and white or light makes for an opaque area.

Other Filters

If you use the multiple filter layers, you will see that the previous filter can be used as a mask for a subsequent filter. As with images in the Project Editor, <<Filter 1>> and <<Filter 2>> can be used as input into the masks of, respectively, filter layer 2 and filter layer 3. To illustrate this concept, try the following example:

1. From the **File** menu, choose Project/New to clear out the Project Editor. Click Hide Window. Close any open image windows.
2. From the **File** menu, choose Image/Open and load the image (not video clip) of your choice.
3. From the **Edit** menu choose Copy, which will copy the image you just loaded onto the Windows Clipboard.
4. From the **File** menu, choose Image/New. This will create a new, blank image.
5. From the **Edit** menu, choose Paste, and the image from the clipboard will be pasted into the new image window.
6. From the **Image** menu, choose Mask.
7. From the list, choose Star. Ensure that Invert Mask is de-selected. Click on Mask Color, select Black, and click OK. Click OK to apply the mask.
8. A second time, from the **Image** menu, choose Mask.
9. From the list, choose Star. This time, select Invert Mask. Click on Mask Color, select White, and click OK. Click OK to apply the mask. The resulting image should be a white star surrounded by a black border.
10. From the **Tools** menu, choose Project Editor.
11. In the drop-down image list under the Start image of the Project Editor, choose Image1.
12. Set your filter to Distort and click Edit.
13. Choose Rotate from the distortion list and click OK.
14. Open the Preview Window and use the Percentage slider to verify that what is occurring in the first filter is a rotating, black and white, star.
15. Press **[123]** to advance to the second filter layer.
16. Under Start image, <<Filter 1>> is selected by default. Instead, use the dro-down list to select the image that you originally loaded in step 2.

17. Choose Colorize from the filter list and click Edit.
18. From the list of effects, choose Emboss and click OK.
19. Click Options to open the clip options.
20. Under Filter Percentage, choose Constant, 100%. This will apply the Emboss evenly throughout the video clip.
21. Under Alpha Masks, choose <<Filter 1>> as your Start Alpha Mask. This will use the rotating star that we created in the first filter layer as the alpha channel. Remember, the black areas will be transparent and the white areas will be opaque. Click OK.
22. Click Create Animation and give the .AVI file any filename.
23. Once the .AVI file is created, use the AVI Player to load and play.

Although there were a number of steps involved, the resulting video clip is fairly impressive. Dynamic masks can be used to create unbelievable effects. Some more things to experiment with:

1. In the above example, use the same filter layer 1, but change the second layer to be a Reverse Zoom Out distortion effect applied to the first layer, <<Filter 1>>. In the third filter layer, use <<Filter 2>> as the mask against a static emboss. This way the star will zoom in from nowhere, as it is rotating.
2. Start with a completely white image as your Start image. Use the first filter layer to construct an Explode transition. Use the second filter layer to perform a Shear distortion onto <<Filter 1>>. For the third filter layer, use two images, Start and End, of the same size. Under Options, set the start mask to be <<Filter 2>>. Set the third filter layer to be Overlay on Alpha Channel. Render this one for a truly amazing transition.

Chapter 10: More About PhotoMorph

This chapter includes in-depth and reference information about digital video, image conversion, and related issues.

Advanced techniques for animation creation with *PhotoMorph* are discussed, with attention to creating the most convincing, realistic, fast, and smooth animations possible.

Special image conversion topics such as color reduction, display devices, device dependency, file compression, and anti-aliasing are covered.

Getting the Most Out of Digital Video

This section discusses methods for creating top-notch animations with *PhotoMorph*. Topics include:

- ◆ **Speed**
- ◆ **Compression**
- ◆ **Image and Conversion Topics**
- ◆ **Import/Export File Formats**
- ◆ **Quality Setting**

Video for Windows "Skip video frames..."

If the action in an AVI animation looks jerky, check to make sure that the Video for Windows "Skip video frames..." option is turned OFF.

- ◆ Go to the Windows Main window. Select Control Panel.
- ◆ Choose Drivers, and select **(MCI) Microsoft Video for Windows** from the list.
- ◆ Click on the **S**etup button. Check to see if the "Skip video frames if behind" option is selected. If it is, de-select it.

Speed

The speed of your animation can contribute greatly to its believability. In general, an animation looks much better if it moves along fairly swiftly. Speed can be affected in a number of different ways. Some are more controllable than others.

The Speed (Frames-per-second) setting

You can enter any number you wish in the Speed edit box of the *Animate* parameters area of the *Project Editor*. However, the actual speed of the animation will be limited by the capabilities of your hardware (see **Hardware** below).

Frame Size

Using a smaller frame size will speed up your animation. Remember, **PhotoMorph** chooses the *largest image frame size in the entire animation* (all clips included) and scales the animation to that size. Therefore, you should make sure that you don't mistakenly include a large image in the animation, or else all your images will be scaled to that size.

FLC File Creation

FLC files can play faster than AVI files. You can use PhotoMorph to create 8-bit FLC animations. The quality of the animation will be affected, since colors will be lost, but the animation file will run faster. You must use the Media Player in the Accessories folder to play FLC files.

Hardware

Your hardware can be the single most limiting factor in determining how fast your animations can run. Components affecting speed include:

- ◆ Speed of machine (MHz)
- ◆ Amount of memory (RAM)
- ◆ Size of disk cache
- ◆ 386/486/Pentium processor
- ◆ Speed of hard disk, state of fragmentation of files
- ◆ Speed of video card
- ◆ ISA, local bus, VESA, EISA
- ◆ Type of AVI compression (some types support hardware acceleration)

Special hardware that can speed up animations includes:

- ◆ Graphics accelerators
- ◆ High-speed disk drive
- ◆ Video accelerators

A System Maximized for Speed

The fastest system for playing AVI files would be something similar to the following: A Pentium PC system with a PCI bus and a 24-bit PCI VGA card, 32-MB of RAM, an AVI accelerator card.

Compression

Since animation files can be huge, you should always choose some type of animation file compression.

As an example, imagine you have an animation in which the frames are 320 X 200 pixels and the length of the animation is 30 frames (a modest length for an animation). The final size of that animation would be about *5.7 megabytes, uncompressed*.

- ◆ Use the **Compression** list box in the *Animate* parameters area of the Project Editor to choose a compression technique for your selected output file type.
- ◆ For AVI files, use the **Quality** setting in the Output File Type/ Setup dialog box of the *Animate* parameters area in the Project Editor. As a guideline, a quality setting of **75** usually produces a reasonably high-quality animation with good compression.

The higher the compression rate, the more blurry or chunky (pixellated) the frames will appear. You will have to determine the compression rate that still preserves sufficient quality to satisfy you but produces manageable file sizes for your system.

If you plan to merge animations at a later date, it is best to preserve as much quality as possible.

Image and Conversion Topics

Colors and Color Reduction

This section offers discussions about several aspects of colors and color information, including color reduction, dithering, palettes, display devices, and storing color information. This information will help you when you are working with the image conversion facilities in **PhotoMorph**.

Methods of Color Reduction

Reducing the number of colors in an image can be valuable for many reasons. High-color images require a lot of disk space, so reducing the number of colors is one way of saving space. Also, many output devices have a rather limited number of colors available for display, and using color reduction with dithering can vastly improve the appearance of high-color images on these types of boards.

PhotoMorph has two methods available to reduce the number of colors in an image: *Flat Cut* and *Optimized Cut*. **Note:** It is important to realize that when a color reduction is performed on a high-color image, color information is **lost** (discarded) at that point.

Flat Cut can be used to reduce colors to 16-bit color (32,767 colors), 256 colors, 16 colors or monochrome. It uses a simple algorithm for color reduction, creating a uniform distribution of colors across the visible spectrum. It then uses this set of colors and matches them as closely as possible to the image's original colors.

Optimized Cut can be used to reduce to 256 or 16 colors. The Optimized Cut algorithm may produce results far superior to the Flat Cut algorithm (depending on the image). Optimized Cut is a method to determine the most important colors in the *particular image* you're working with. It creates a custom palette which will optimize the appearance of that certain image.

Dithering

Dithering is an extremely useful tool for color management. It can be used with both the Flat Cut and Optimized Cut methods of color reduction.

In a nutshell, dithering increases the **apparent number** of colors in an image by reducing the **apparent resolution** of the video screen. How does this work? Dithering uses patterns of different-colored pixels which cause you to perceive a blended color. For example, an area filled with an alternating pattern of red and blue pixels will be perceived as being purple. Therefore, the image *appears* to have more colors than it actually contains. The flip side of using this technique is that the "purple" area will appear slightly more blurry or grainy to you than if it were composed of truly purple pixels.

Palettes

A palette is an assortment of colors that can be used to draw an image. There is an important distinction between a **device palette** and an **image which has a palette included** in its information.

A device palette is a palette of colors that a particular device has available for use in displaying images. If the device's palette is fixed, the colors must be chosen from the same palette for any image displayed. If the device's palette can be set, then there is more flexibility in choosing colors.

An image may have a palette included in its information. This means that the palette of colors used in the image is actually encoded into the image's data.

The distinction between the device palette and an image's palette may be illustrated in this example. Suppose you have an image which is drawn in sixteen shades of blue. The image's palette, which is included in the data, consists of these sixteen different blues. Now imagine you have a device which has a fixed 16-color palette, which includes colors distributed over the range of the visible spectrum. When you display the image on this system, the device can only use the shades of blue in its fixed palette (in a standard 16-color palette, there would be two shades of blue to choose from). It will display the image using only its palette's two blues. Obviously, the image's appearance will have deteriorated. (However, no color information has been lost, since the information was encoded in the image itself. It is only the display device's limitations that have affected the image's appearance.)

Now, imagine that you display the same image using a device with a 16-color custom palette. Since the colors in a custom palette can be set, the device can accommodate this image by setting its own palette to the sixteen blues in the image's palette. In this case, the display device can take full advantage of the image's palette information and can show the original colors accurately.

It should be mentioned here that Windows does not support a custom palette for 16-color devices. However, there are non-Windows applications that do support 16-color custom palettes.

PhotoMorph can create custom palettes for images using the Optimized Cut color reduction algorithm. Optimized Cut and the other color reduction algorithm, Flat Cut, are described in the **Methods of Color Reduction** section.

How Color Configurations of Display Devices Affect Color Reduction

In this discussion, we emphasize the impact that your device's color configuration has on your choice of color reduction methods.

Monochrome

Monochrome is otherwise known as black-and-white.

Since monochrome displays have only two colors available, there's a very limited amount of subtlety you can achieve in displaying images. The Flat Cut color reduction algorithm is sufficient for any reduction to monochrome.

16 Colors

If you're running Windows and have a 16-color board, the palette is fixed. However, some non-Windows programs have custom 16-color palettes. You can take advantage of that capability by using Optimized Cut and then transferring the color-reduced image into the other program.

If you want to use Windows and display an image that originally had more than 16 colors, you will get the best possible results if you use Flat Cut and dither the image to 16 colors.

256 Colors

When you are running **PhotoMorph** with a 256-color video board and Windows driver, 256 colors are available for any and all images being displayed at any one time. With the Optimized Cut color reduction algorithm, **PhotoMorph** can custom-set the 256 palette colors to conform to a particular image's original colors, so as to produce the best-looking image possible. Dithering will also improve the image's appearance.

If you use Flat Cut color reduction, the new palette will be composed of 256 colors evenly spaced throughout the visible spectrum. Depending on what you intend to use your image for, this may be the option you want (though generally a custom palette will produce better-looking images). You may also use dithering with Flat Cut to improve the image's appearance.

If you use the Optimized Cut algorithm to reduce an image's colors, it may look slightly different if you display it under Windows than if you display it with a non-Windows application. This is because Windows reserves 20 colors of the 256-color palette for its own use. Since these 20 fixed colors will likely not be included in the custom 256-color palette of the image, they will "bump" some of the custom colors, and your image will look a little different.

16-Bit Color ("High Color")

If you're using a 16-bit board (sometimes known as "high color"), you have over 32,000 colors available for display. 16-bit images do not have palettes; therefore, only the Flat Cut option is available. **PhotoMorph** supports two 16-bit formats: Targa (TGA) and TIFF.

24-Bit Color ("True Color")

"True Color" 24-bit boards can display 16.7 million colors. The human eye can only distinguish about 9 million colors, so these boards essentially have **all perceivable** colors available for display. **PhotoMorph** supports 8 True Color formats. They are: Targa (TGA), TIFF, Video Toaster IFF, JPEG Compressed, PCX, Windows DIB/BMP, Color PostScript (EPS), and Macintosh PCT.

32-Bit Color

32-bit images include an extra 8 bits of information which involves alpha channels. Alpha channeling is a sophisticated image generating technique which essentially makes portions of an image "clear," so that another image or a background can show through. **PhotoMorph** supports three 32-bit formats: BMP, Targa (TGA) and TIFF.

Device Dependency: Issues and Information

Differences among devices and media become important issues to deal with when you're working with graphics. You need to be aware of these issues if you plan to transfer images among devices that vary in their color support or resolution, or if you plan to print graphic images.

Clipboard Files

You may run into a problem with device dependency if you use Clipboard files (.CLP files) to transfer images between devices. Some formats create device-dependent bitmaps (DDBs). As the name implies, this type of bitmap includes information that is only compatible with a particular type of device. If you are importing a .CLP file from a different type of device, you may not be able to load it in **PhotoMorph**.

Color Support

One parameter that varies greatly among display devices is color support. Display devices can support anywhere from two (monochrome) to 16.7 million (24-bit) colors. You can imagine that transferring files between devices that support different numbers of colors can create problems. As one example, if a picture created with a device that supports 256 colors is viewed on a 16-color video board, it will likely contain inaccurate colors and banding.

Differences in Resolution and Aspect Ratio

Another issue to consider is differences in resolution among devices. An image which takes up the entire screen on a video monitor with a resolution of 70 dots per inch may be only three inches wide when printed on a laser printer at 300 dots per inch. A related issue is differences in aspect ratio (the ratio of pixel height to pixel width). Pixels can appear somewhat rectangular on some devices; a square drawn on such a device may not *look* like a square, though the number of pixels on each side is actually the same.

Color Creation: Light vs. Ink

When printing images, more problems may surface because of the different mechanisms for creating colors between video monitors (using light) and printing on paper (using ink). The same image may look very different on a video screen than when it's printed on paper. Video monitors use an additive method of color creation, using red, green, and

blue light to create all of the other colors in the visible spectrum. Printing uses a subtractive method of color creation, with layers of cyan, magenta, yellow, and black ink mixing to create all other colors. On an more elementary level, it's clear that if the red of one device looks different from the red of another device, then all the different saturations (shades) of that color will look different as well.

Image File Compression

PhotoMorph supports several different kinds of graphics file compression. In most cases, an image's specific file format dictates which compression algorithm **PhotoMorph** must use when saving the file in compressed form.

The one exception to this rule is the TIFF format. You have an option to set the default compression algorithm that will be used when you save a TIFF file in compressed format (use the Settings dialog box under the **File** menu to change the default TIFF compression algorithm). You may find this handy if you will be using the compressed images with another program that recognizes only certain types of compressed files, or if your disk space is of paramount concern and you need to be sure you're using the most efficient algorithm.

All *standard PhotoMorph* image compression formats are "loss-less." This means that no information is lost when the image is compressed, and therefore when it is decompressed, it will be exactly the same as before. However, **PhotoMorph** can also save images in the special JPEG compression format. JPEG is a "lossy" compression format. Information can be lost when an image is compressed using JPEG. The user should review the information on JPEG Compression in the **Import/Export File Formats** section of this manual before using JPEG.

The compression algorithms used by **PhotoMorph** can be discussed in terms of three basic types:

- ◆ *LZW (Lempel, Ziv & Welch)*
- ◆ *RLE/PackBits (Run-Length Encoding)*
- ◆ *JPEG ***

See **Import/Export File Formats before using JPEG compression on your image files.

LZW - Lempel, Ziv & Welch

LZW encoding is a very efficient compression technique. It requires more computation time than RLE, but generally produces better compression results.

LZW works by constructing a tree of color patterns that are used in the image. Thus, if a pattern recurs, no matter how complex, it can be encoded in an extremely simple form. For example, if the image has a color that's created by using a pattern of different-colored pixels (such as alternating red and yellow pixels for an orange area), LZW would produce good compression results.

LZW may be specified for TIFF files by using the TIFF Compression group in the Settings dialog box under the **File** menu.

RLE/PackBits (Run-Length Encoding)

This type of encoding is very quick and produces good compression results when your image has a lot of runs of same-color pixels and not much detail. For instance, say you have an image which has a run of 100 red pixels on one of its lines. In raw form, it would take 100 memory locations to store the information in those pixels. In RLE, the pixels would be stored as (essentially) "100 red," taking up only two memory locations, resulting in an enormous reduction in data size.

RLE compression is used for Targa and DIB files. RLE (PackBits) compression may be specified for TIFF files by using the TIFF Compression group in the Settings dialog box under the **File** menu.

Aliasing & Anti-aliasing

A pervasive problem with computer graphics files is the appearance of objects that include curves or diagonals. The jagged appearance of such objects is caused by too-low resolution of screens or printers, which results in step-like approximations where there are supposed to be smooth curves or diagonals. This phenomenon is known as *aliasing*. Colloquially, the small step-like areas are called *jaggies*.

- ◆ To improve the appearance of curves and diagonals, a technique has been developed which is known as *anti-aliasing*. Anti-aliasing causes the apparent smoothing of curves by capitalizing on a particular characteristic of the human perceptual system. The human eye tends to blend colors that are in close spatial proximity, especially if the colors are also close to each other on the visible spectrum. This causes a slight blurring of the edges between the two colors, resulting in the appearance of a smooth, continuous blend. So, if the pixels that are *near* to an object's jaggies are colored a slightly different shade of the object's color, the eye will blur the jaggies and you will perceive a much smoother curve. The improvement can be quite striking, since the nearby pixels are not actually perceived to be a different color when viewed by the human eye, but the curve seems magically to become much more smooth and continuous.

Import/Export File Formats

Following are the file formats currently supported by **PhotoMorph** for import and/or export.

Note: Though **PhotoMorph** can import images of many different color configurations, *the Preview Window's Save feature can write only 24-bit images*. Therefore, if you want to save a frame created by **PhotoMorph** in a reduced color format, you must either:

1. Copy the frame to an empty window from the Preview Window.
2. Use the **Colors** menu or **File/Image/Save As...** to reduce the number of colors in the image.

OR:

1. Save the image to a file from the Preview Window. Only those formats supporting 24-bit color will be available.

2. Open the file and reduce the number of colors using the **Colors** menu or **File/Image/Save As...**

BMP - Windows

IMPORTING:

The Windows bitmap format supports monochrome, 16 colors, 256 colors, 24-bit color, and 32-bit color. Support for 32-bit color is new to Windows so many other applications will not support 32-bit BMP images created by *PhotoMorph*.

EXPORTING FROM FILE MENU:

PhotoMorph exports monochrome, 16-color, 256-color, 24-bit, and 32-bit Windows bitmaps. Windows BMP files are always uncompressed.

EXPORTING FROM PREVIEW WINDOW:

Frames can be saved as 24-bit or 32-bit BMP files from the Preview Window. Only clips that contain alpha channel information can be saved as 32-bit from the Preview Window.

BMP - OS/2

IMPORTING:

The OS/2 bitmap format supports monochrome, 16 colors, 256 colors, and 24-bit color.

EXPORTING FROM FILE MENU:

PhotoMorph exports monochrome, 16-color, 256-color, and 24-bit OS/2 bitmaps. OS/2 BMP files are always uncompressed.

EXPORTING FROM PREVIEW WINDOW:

Frames can be saved as 24-bit OS/2 files from the Preview Window.

CLP - Windows Clipboard files

IMPORTING:

Windows Clipboard files can contain many different types of Clipboard information.

PhotoMorph supports loading Clipboard files which contain device-dependent bitmaps or device-independent bitmaps.

PhotoMorph can only load device-dependent bitmaps that are compatible with the current device. For example, if you created a .CLP bitmap with a 16-color VGA device, you would not be able to load this file using a 256-color VGA device.

If you are using a 256-color device, please see the section, "Clipboard Files" under **Device Dependency: Issues and Information** in this chapter for more information about using Clipboard files.

DIB - Windows

IMPORTING:

The Windows DIB (device-independent bitmap) format supports monochrome, 16 colors, 256 colors, 24-bit color and 32-bit. Support for 32-bit color is new to Windows so many other applications will not support 32-bit BMP images created by *PhotoMorph*.

EXPORTING FROM FILE MENU:

PhotoMorph exports monochrome, 16-color, 256-color, 24-bit and 32-bit color Windows DIB files. The user can set the compression state for monochrome, 16-color and 256-color DIBs. 24-bit and 32-bit DIBs cannot be compressed.

EXPORTING FROM PREVIEW WINDOW:

Frames can be saved as 24-bit or 32-bit color Windows DIB files from the Preview Window. Only clips that contain alpha channel information can be saved as 32-bit from the Preview Window.

EPS - Encapsulated PostScript

EXPORTING FROM FILE MENU:

EPS is the only file format the *PhotoMorph* exports but does not import.

EPS is a format used by certain printing devices and desktop publishing programs. If you are printing to a black-and-white PostScript printer, you should convert your image to grayscale before printing. If you are printing on a color PostScript printer, you should convert your image to color before printing. You can use the **Colors** menu to convert to color or to grayscale.

Five color configurations are possible when writing PostScript images: monochrome, 16-color, 256-color (color-mapped), 256-color (grayscale), and 24-bit color.

EPS files cannot be compressed.

EXPORTING FROM PREVIEW WINDOW:

Frames can be saved as 24-bit color EPS files from the Preview Window.

GIF - Graphics Interchange Format

IMPORTING:

The GIF format supports monochrome, 16 colors, and 256 colors. GIF files can be interlaced or non-interlaced (*PhotoMorph* loads both types).

IFF - Amiga/Video Toaster

IMPORTING:

Subformats supported are: standard IFF with color map, HAM, and 24-bit color. The 24-bit color subformat is compatible with NewTek's Video Toaster.

JPG - JPEG Compressed Format

What is JPEG?

JPEG is a new high-compression technique for color and grayscale images. JPEG can be used to compress images from one-third to one-thirtieth of their original size. It is especially useful for images with a lot of color and detail. JPEG provides good compression where non-lossy compression techniques (such as Run-Length Encoding or LZW) do not perform well.

This JPEG software is based in part on the work of the Independent JPEG Group.

Compressing a file with PhotoMorph's JPEG Option

PLEASE NOTE: JPEG is a "lossy" compression technique. If you are not familiar with JPEG compression, you are advised to read the following sections, **What is lossy compression?** and **Using JPEG Compression** before performing JPEG compression on any of your files.

To use JPEG compression in PhotoMorph:

1. Choose **File/Image/Open**. Load (open) the file you wish to save as JPEG-compressed.
2. Choose **File/Image/Save As...**
3. Look in the file formats list (click on the down-arrow button at right for a complete listing of file formats) and click on the item **JPG - JPEG Compression**.
4. A dialog box will appear. Use this box to set the JPEG Quality setting.

The JPEG Quality setting can be any number from 1 to 100. (In general, the higher the quality setting (100 being highest quality), the lower the compression rate, and as the quality setting number is lowered, the compression rate will rise. *Please* read the sections **What is lossy compression?** and **Using JPEG Compression** before performing JPEG compression on your files!)

THE JPEG QUALITY SETTING DIALOG BOX

What is lossy compression?

When an image is compressed with JPEG, it is changed slightly. This means that when the file is decompressed, the image's appearance will also have changed. This is known as "lossy" compression, since some information is lost in the course of the compression operation.

The amount of change, or image loss, depends on the JPEG Quality setting used when compressing the file. If the JPEG quality setting is high (highest setting = 100), these

changes will probably not be noticeable to the human eye. If the quality setting is lower, these changes become more noticeable. With a quality setting of 50, for example, JPEG losses would be noticeable as small dots and a slight fuzziness near edges within an image. With a lower quality setting, the losses will become very noticeable and will appear as fuzziness and small blocks.

Using JPEG Compression

Because JPEG may change an image, you should investigate its effects before deleting the original image. If you require high quality (very little loss but low compression rate), you should use a quality setting of 100. Save the image in the JPEG format (see the section above, **Compressing a file with PhotoMorph's JPEG Option**, for the procedure), reload it, and examine the effects of JPEG compression. If the losses are too noticeable, you should not use JPEG for compression, but rather save the file in the TIFF format with LZW compression. This compression technique is not lossy and therefore will not change the image.

For typical use, a JPEG quality setting of 80 will give you a good balance between high quality and high compression rate. Very high compression rates can be achieved by choosing a low quality setting.

Actual compression rates will depend on the character of the image being compressed. As an example, scanned photographs will typically compress to between one-third and one-fifteenth of their original size with a JPEG quality setting of 100.

JPEG Performance

The JPEG algorithm requires computation and will take three to four times longer than a compression technique like LZW. JPEG does not require a math co-processor but may run slightly faster with one. If you are working with large images and notice a lot of activity on your hard disk, this may indicate that you need more system RAM.

There are specialized hardware accelerators which can greatly speed up JPEG. The **PhotoMorph** JPEG option does not require any such specialized hardware but will read and write JPEG images which are compatible with most of these accelerators.

Problems you may encounter when using JPEG

Out of memory

Large, high-color images require lots of memory. To decompress a JPEG image, you must have enough memory to hold the original image. The upper limit for the file size that **PhotoMorph** can handle is 16 megabytes.

Out of disk space

If you run out of disk space while saving a JPEG image, you must use DOS or the File Manager to delete files or otherwise create space for your JPEG image.

Cannot read a JPEG image

PhotoMorph JPEG uses the industry standard JFIF JPEG file format. Although this format is widely used, not all software products have made the change to this standard. If **PhotoMorph** fails to read a JPEG image which was created by another

product, you should make a copy of the image on a floppy disk, include information on how to contact the product's manufacturer, and send the floppy disk to:

North Coast Software, Inc.
Technical Support
P.O. Box 459
Barrington, NH 03825

Images can only be accepted on floppy disks.

Macintosh QuickTime JPEG

JPEG images created on a Macintosh contain a 128-byte header. This header cannot be read by this version of **PhotoMorph**.

PCC - PC Paintbrush Clipboard files

IMPORTING:

For information on PC Paintbrush files, see file format PCX below.

PCT - Macintosh Color Bitmap

IMPORTING:

PhotoMorph supports loading of PICT 2 raster files in monochrome, 16 colors, 256 colors, and 24-bit color.

PCX - ZSoft PC Paintbrush

IMPORTING:

PCX supports monochrome, 16 colors, 256 colors with implicit gray palette, 256 colors with palette, and 24-bit color.

EXPORTING FROM FILE MENU:

PhotoMorph exports monochrome, 16 colors, 256 color, and 24-bit color PCX files. PCX files are always compressed.

EXPORTING FROM PREVIEW WINDOW:

Frames can be saved as 24-bit color PCX files from the Preview Window.

RLE - Compressed Windows Bitmap

IMPORTING:

The Windows RLE format supports monochrome, 16 colors, and 256 colors.

EXPORTING FROM FILE MENU:

PhotoMorph exports monochrome, 16-color, and 256-color RLE files. Windows bitmap files with the RLE extension are always compressed.

EXPORTING FROM PREVIEW WINDOW:

Frames cannot be saved to RLE directly from the Preview Window.

TGA - Targa

IMPORTING:

TGA supports 256 colors with implicit gray palette, 256 colors with palette, 16-bit, 24-bit, and 32-bit color.

EXPORTING FROM FILE MENU:

PhotoMorph exports 256-color, 16-bit, 24-bit, and 32-bit TGA files. The user can set the compression state for Targa files.

EXPORTING FROM PREVIEW WINDOW:

Frames can be saved as 24-bit or 32-bit color TGA files from the Preview Window.

TIF - Tagged Image File Format

IMPORTING:

The TIFF format is a very complex format with many different components. You may find that some applications will not accept TIFF images created from other sources. This is because many applications will read or write only a few TIFF subformats.

PhotoMorph can read a large majority of TIFF files. It follows the TIFF 5.0 specifications but is compatible with most earlier versions as well. **PhotoMorph** is equipped to deal with certain common deviations from TIFF 5.0 specifications in an effort to load as many TIFF images as possible.

TIFF supports monochrome, 16 colors, 256 colors, 16-bit, 24-bit, and 32-bit color.

PhotoMorph supports TIFF files with palettes or no palettes; Motorola or Intel-style TIFFs; planar and non-planar color configurations; multiple samples per pixel; and multiple bits per sample.

EXPORTING FROM THE FILE MENU:

PhotoMorph writes TIFFs according to the TIFF 5.0 standard. Monochrome, 16-color, 256-color, 16-bit, 24-bit, and 32-bit color are all exported.

The user can set the compression state for TIFF files. In fact, the user can set a different compression algorithm for each color configuration under TIFF by using the "TIFF Compression" group in the Settings dialog box under the **File** menu. Compression for 32-bit TIFFs will be set to be the same compression format as that of 24-bit TIFFs.

Several different file compression algorithms are supported: LZW and RLE (PackBits) for all color types; Group 3 (CCITT Fax 3) and Group 4 (CCITT Fax 4) are also available for monochrome.

EXPORTING FROM PREVIEW WINDOW:

Frames can be saved as 24-bit or 32-bit color TIF files from the Preview Window.

WPG - WordPerfect Raster format

IMPORTING:

The WPG format supports monochrome, 16 colors, and 256 colors.

WPG files come in two types: raster and metafile. *PhotoMorph* supports WPG raster files.

EXPORTING FROM FILE MENU:

PhotoMorph exports monochrome, 16-color, and 256-color WPG files. Files are always compressed.

EXPORTING FROM PREVIEW WINDOW:

Frames cannot be saved directly from the Preview Window.

Quality Settings

AVI Files: Output File Type Quality

The **Quality** setting in the Output File Type/Setup dialog box (in the *Animate* parameters area of the Project Editor) affects the compression rate of AVI output files. This influences the quality of the animation at the time of compression.

The higher the compression rate, the lower the quality of the animation. As the compression rate is set higher, the frames will become progressively more blurry or chunky (pixellated). In general, a **Quality** setting of **75** will preserve a reasonably high animation quality and will produce pretty good compression.

Animation Quality setting

The **Quality** setting in the *Animate* parameters area affects the appearance of the animation and its frames. This setting influences the quality of the animation frames at the time of creation.

Depending on the images used in the particular animation, choosing High Quality may change the way your animation is created by using such techniques as anti-aliasing or a more sophisticated image processing algorithm.

Video for Windows "Skip video frames..."

If the action in an AVI animation looks jerky, check to make sure that the Video for Windows "Skip frames..." option is turned OFF.

- ◆ Go to the Windows Main window. Select Control Panel.
- ◆ Choose Drivers, and select **(MCI) Microsoft Video for Windows** from the list.
- ◆ Click on the **S**etup button. Check to see if the "Skip video frames if behind" option is selected. If it is, de-select it.

Troubleshooting

Cannot load image file

This message occurs when **PhotoMorph** tries to load an animation project's Start and End images. It indicates that there is a problem with the image file specified in the title bar of the message box.

Possibilities to investigate:

- ◆ The file was renamed or moved to a different location on the disk.
- ◆ The file was deleted from the disk.
- ◆ The project (.PMP) file was somehow corrupted.

Project file was damaged, cannot load

This message appears if the .PMP file you try to load was corrupted. This is caused by a disk error.

Old PhotoMorph project

You will receive a message if your project was created by an earlier version of **PhotoMorph** and is incompatible with the present version.

Clip # is incomplete, cannot be rendered

This message indicates that one of the images associated with the named clip cannot be loaded or located.

Insufficient Memory

This message occurs when your computer does not have enough memory free for **PhotoMorph** to load or display an image or project.

This can also occur when **PhotoMorph** is creating new animations or images (AVI files, screen captures, etc.)

Possible solutions:

- ◆ Close images not being used at present
- ◆ Increase virtual memory
- ◆ Smaller images
- ◆ Buy additional RAM

If your animation looks jerky...

If you are running an AVI animation, be sure that the "Skip video frames..." option in your Video for Windows Setup is turned OFF.

- ◆ Go to the Windows Main window. Select Control Panel.
- ◆ Choose Drivers, and select **(MCI) Microsoft Video for Windows** from the list.
- ◆ Click on the **Setup** button. Check to see if the "Skip video frames if behind" option is selected. If it is, de-select it.

Questions

How do I save a single frame?

Use the [Preview Window](#) to create the desired image and then save it to a new window or directly to a file.

Why do certain AVI files fail to work correctly as source material?

Certain AVI compressors cannot be used as source AVI's for other animations because they use a custom temporal compression technique where only the changes from frame to frame are stored. When a single frame is loaded from the AVI file, the frame does not contain the entire image. [Cinepak](#) is an example of this type of compressor.

How can I improve the look of the output?

General: Animation Quality is controlled by:

- ◆ Project Editor Quality settings (low => medium => high)
- ◆ Image size (smaller animates faster)
- ◆ Source Image quality (better input produces better output)
- ◆ Number of output frames (more frames look smoother)
- ◆ Output speed (high frames-per-second looks smoother)
- ◆ Different Filter editor settings

Colorize: The quality of colorize frames is determined by the quality of the input image and animations as well as the output compression settings. If the quality of the output is poor, the quality of the input images must be improved or the compression quality must be raised.

Distort: Distort frame quality is controlled by the [Quality](#) settings in the [Project Editor](#). To improve the image quality, use Medium or High.

Morph: Morph quality is controlled by the [Project Editor](#) quality settings as well as the number and placement of the Morph points in the Morph Editor. If ghosting is taking place, add more points and ensure that the points are correctly aligned with the image features. If the image seems to be tearing, add more points where the tear is taking place.

Overlay: Overlay quality is affected most by the quality of the source images. If the keying technique is not taking place cleanly, the input images may have to be modified for higher pixel quality, better

color resolution or more contrast. Alpha channel overlays can also be effected by incorrect alpha channel locations and values.

Transition: Most transition quality problems are a result of insufficient numbers of output frames or images that are too large to be animated quickly. Increase the number of output frames or decrease the size of the source images to improve output smoothness.

Warp: Warp quality is controlled by the Project Editor quality settings as well as the number and placement of the Warp points in the Warp Editor. If incorrect distortions are taking place, add more points and ensure that the points are correctly aligned with the image features. If the image seems to be tearing, add more points where the tear is taking place.

How can I play animations at full screen?

The best way to do this is with a hardware accelerator card. The cheap way to do this is with the Media Player. Load an AVI file into the Media Player. Choose Configure/Device and then enable the Full Screen option. This will play an animation at full screen.

How can I get faster playback of animations?

There are several options. 1) Create a smaller AVI file. 2) Output the animation as a FLC file and use the Media Player to play it. 3) Get a faster computer, one with a VL or PCI video card. 4) Buy an AVI accelerator card. Orchid Technologies, Diamond Computer Systems, VideoLogic, Alpha Systems all make accelerator cards.

How can I get more really amazing examples of special effects?

The best thing to do in this case is to upgrade to the PhotoMorph CD-ROM. This amazing disk has more than 300 Megabytes of morph movies and loads of morph projects to explore. Call (603) 664-6000 to order.