

### Chapter 6: Working with Digital Images

Images – drawings, photographs, and other graphics – are an essential component of an attractive Web site. As we saw in Chapter 5, every appealing site makes use of eye-pleasing images in one way or another. This chapter explores tools and techniques for manipulating images for presentation on the Web.

Note that this chapter includes many examples of color photographs. If you are reading this chapter on a black-and-white printed page, you may want to open the Microsoft Word or Acrobat PDF version of this chapter (available on the Toolkit CD-ROM or Web site) and look at the photographs in color.

Image files may come from many sources:

- Line art or drawings can be constructed using an illustration tool, such as Adobe Illustrator
- Photographs can be scanned in using a flatbed scanner
- Or, photographs can be taken in digital form to begin with, using a digital camera

There are numerous file formats for digital images, but on the Web, two primary formats are dominant:

- GIF, the Graphics Interchange Format invented by CompuServe, is the workhorse format for Web images.
- JPEG, the Joint Photographic Experts Group format, is popular for photographs and other complex images.

Both GIF and JPEG are formats that compress image information to save disk space and file transfer time. The GIF compression scheme is especially well-suited to line art and simple graphics, and it's adequate for many photographs. JPEG was designed to work well with photographs, and can often achieve a compression factor far superior to GIF for any given photograph.

With GIF, compression is deterministic. You cannot alter the compression algorithm itself. However, you can reduce the size of a GIF image by reducing the number of colors in the image – more on this later.

With JPEG, the graphics editor you use to manipulate the image will offer you a “quality factor” for the compression. You can try your image out at various compression levels, and settle on a level of compression that's effective without degrading the image.

You may encounter other formats as you acquire or process images for the Web:

## Building a Community Information Network: A Guidebook

- TIFF: The Tagged Image File Format is commonly used when images are first created, say during scanning. TIFFs can be huge but they represent images faithfully and translate well across platforms (e.g. to or from Mac, Windows, and Unix systems).
- PNG: The Portable Network Graphics format was invented as a Web-friendly, cross platform format. PNG offers advantages over both GIF and JPG in many cases. However, even though PNG has been around since 1995, the two dominant browsers, Netscape Navigator and Internet Explorer have not, as of this writing, been endowed with the ability to show PNG files as inline images.

### Images and Colors on the Computer Screen

Images can be made to look reasonably attractive on the computer screen, but there's a lot of difference between print media and a monitor. For instance,

- A high-quality photographic print will have an effective resolution of several thousand dots per inch. Even in a printed book, the resolution will vary from several hundred to over a thousand dots per inch. Your computer monitor has a resolution of, at best, 96 dots per inch (more typically 72 dots per inch).
- The photograph will offer continuous-tone color, showing a full spectrum of possible color values. Your monitor might be limited to 256 or to about 32,000 separate colors. A glance at a photograph might make you think that 256 separate colors is more than sufficient to handle all requirements, but even a simple photograph, represented in digital form, needs thousands of distinct color values to represent each dot in the picture.

The handling of color probably constitutes the greatest variable from computer to computer. Older computers – in particular, older video cards – can handle only 256 distinct colors. More recent machines are set up to handle about 32,000 or more. The newest machines offer 16 or 24 bit color, which provides literally millions of possible color choices; such video setups are sometimes called “true color.”

The monitor isn't the only variable. The GIF format, for instance, is inherently limited to 256 colors. If you scan a photograph and convert it to GIF, software will have to do the best job it can mapping into the smaller *color depth* of the GIF format.

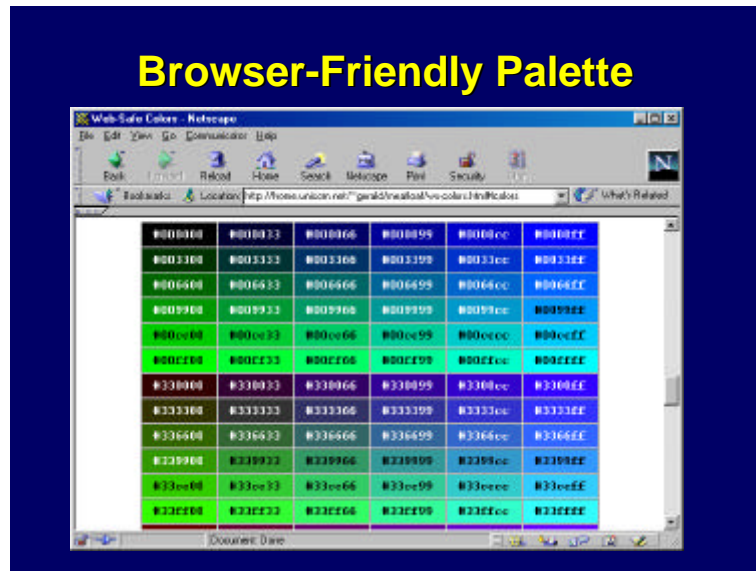
It gets worse. Browsers and operating systems impose their own limitations on color display. In effect, you only get 216 distinct colors on screen at once; if your image offers more, a process called “dithering” will try to map your complex colors on-the-fly into something the browser can display.

In order to make the best of the complicated interactions among the operating system, video card, and browser software, browser designers invented the “browser-safe palette” – a set of 216 colors that will work on all browsers. Graphics editors offer ways to “reduce” the color count in an image, and most offer a way to dither an image down to the browser-safe palette.

It is a matter of some controversy as to whether you should convert your images into the browser-safe format, or let the user's browser do the best job of displaying images after they are downloaded. If you do so, you'll have control over what colors are actually displayed on

## Building a Community Information Network: A Guidebook

users' monitors, instead of ceding that control to the browser at time of downloading. You're also much more likely to have good results if multiple images appear on screen at once, because each additional image demands resources from the video card. If you don't reduce colors in an image down to the browser-safe palette, your users may see good results nonetheless, assuming the browser (and video card and monitor) cooperate to do a good job of dithering your image to the colors available at time of display.



The bottom line? You will want to experiment with your images on different browsers and different video card settings to make sure that what looks crisp and beautiful on your developer's workstation looks good on your users' desktops as well. You may need to adjust images before placing them on the server in order to maximize quality on the most desktops.

Many graphics editors, Web-specific graphics tools, and Web publishing sites offer tools to convert images to the browser-safe palette, or to otherwise minimize file sizes by reducing the number of colors used in an image.

### The Importance of Anti-Aliasing

When your computer represents the characters that make up a font, it does so in a way so that the font can scale for multiple uses. Print the same character on a good laser printer and it'll look fine in 8 point or 48 point size. But if you take an image editing tool and create text to place atop a graphic you're editing, you may find that the image of the text appears "jagged." This is usually because the software doesn't do a good job of "anti-aliasing." That's a fancy term for the process of converting the rounded and angled portions of each character into a pixel representation. The problem is especially visible if you create the graphic in a particular size, then enlarge it.

If you use an illustration tool such as Adobe Illustrator, or an image editing tool such as Photoshop, to insert text into a graphic, you can count on having very good anti-aliasing algorithms at your disposal. If you can't make your editor do a good job, you may need a better tool. Ragged text in logos on your Web site can be a turn-off to users.

### **Digitizing Photographs**

Now let's explore the various ways of getting your photos into digital form:

- Probably the most common approach is to use a scanner. There are many kinds of scanners; the most common is the flatbed image scanner – a device that looks like a small copier minus the output paper tray.
- A convenient alternative if you lack a scanner is to use a photo processor who will scan the photos for you. Kodak, for instance, offers this as an option to their Premium Processing Service. Some services will even post your digital images on a Web site for you to fetch and republish.
- You may prefer to start with your photos in digital form, by using a digital camera.

Let's begin by exploring the digital camera alternative. Here are some advantages to digital cameras:

- You can take a photograph and have it on the Web in a matter of minutes.
- Many cameras let you review photos using an LCD panel on the camera, so you have a good idea whether your photo attempt was successful or not; if the shot doesn't look good in the field, you can delete it and shoot a better one.
- Quality of most digital cameras is certainly adequate for Web purposes, and in many cases is quite good.

There are some cautions to keep in mind:

- You want to get a digital camera that is at least in the “megapixel” range – for instance able to take images at a resolution exceeding 1000 X 1000. As of this writing, megapixel cameras are commonly available in the \$400 range, and two-megapixel and greater cameras are becoming more common.
- Cheaper digital cameras may have poorer optics than even point-and-shoot cameras that cost far less. Watch out for plastic lenses – or worse, for fixed-focus cameras.
- A cheaper digital camera may offer far less control over exposure than a conventional camera.
- Digital cameras consume batteries profligately! When using the flash, you may be able to shoot as few as 50 or so shots before you have to replace batteries. It pays to acquire rechargeable batteries and keep spares on hand. If you are doing a photo shoot in the field and your last batteries die, you will find yourself rushing to the store instead of completing your shoot.
- If you are shooting a large number of photos in the field, and you fill the available memory on the camera, you can't stop at a corner drug store and buy more “film” – as you can easily do with a conventional camera. Digital cameras use several different types of memory devices, many of which are only available at specialty stores. If you plan to do a lot of field work, consider buying additional memory modules – or consider a camera that uses floppy diskettes as the storage medium.

## Building a Community Information Network: A Guidebook

- In many cases, transfer from your digital camera to your computer can be slow and even frustrating. Many digital cameras rely on a simple serial port connection to the PC, which means transfer rates not much faster than modem speeds.

Over time, digital cameras will improve in quality and come down in price. As the computer world standardizes on the USB (Universal Serial Bus) interface, we are beginning to see a new crop of digital cameras that have USB ports. Transfer via a USB port will *greatly* simplify and speed transfer to the PC. Seek a USB camera and avoid a conventional serial cable camera if at all possible.

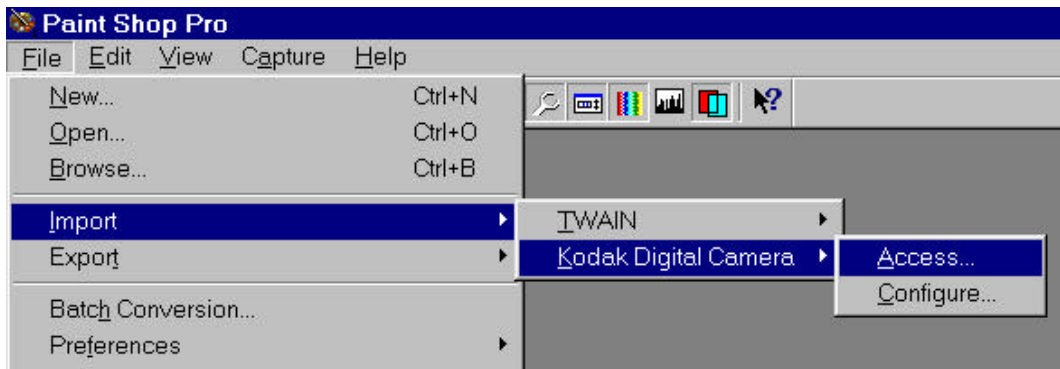
Here are three examples of popular digital cameras – from Olympus, Sony, and Kodak:



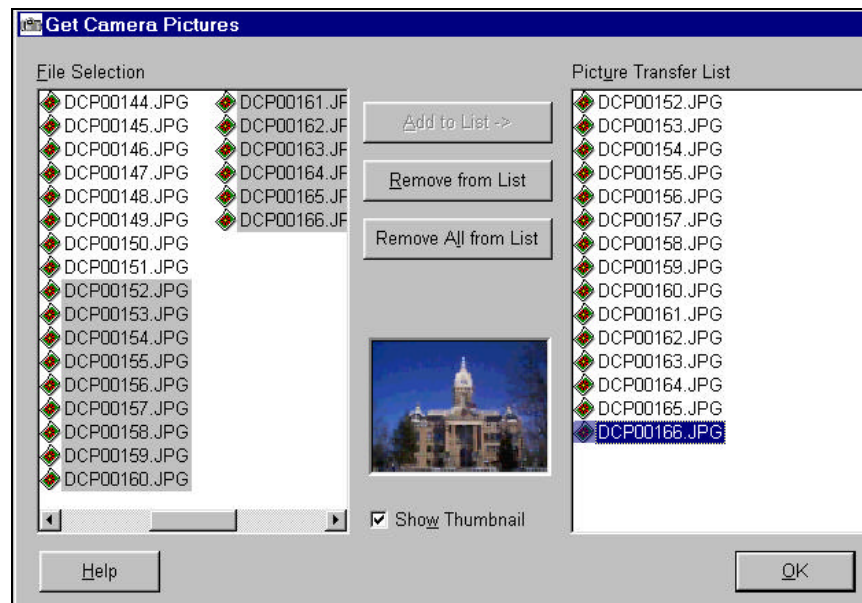
Each of these vendors offers a range of cameras other than the models shown. The Sony camera, a Mavica, is especially convenient because it writes pictures in JPEG format on conventional 5 ¼ inch floppies. You take the floppy out of the camera, put it in the floppy drive on your Web content creation PC, load from the floppy into image editing software, and move your edited images to the server for instant publishing.

Digital cameras that don't output to floppy disks come with cables to connect to the PC over whatever port is applicable, along with software that you install on your destination PC. This software integrates with your image editing software, so that you can fire up your image editor, and tell it to connect to the camera and fetch the photo files:

## Building a Community Information Network: A Guidebook

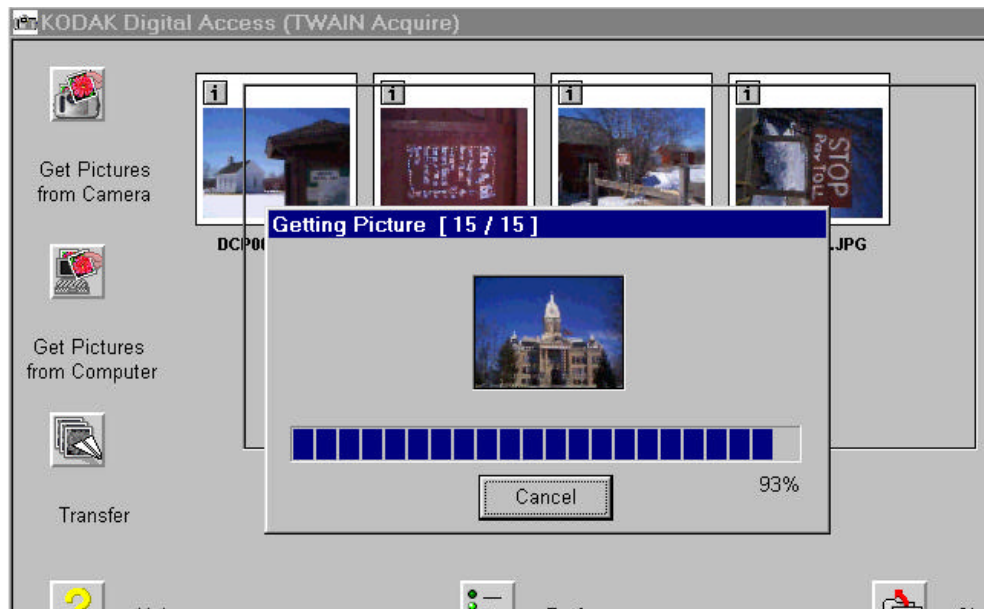


Next you select which photographs to transfer:



Finally, you wait while the camera transmits the data – in this example, at about 100,000 bits per second over a serial cable connected to a Kodak DC-200.

## Building a Community Information Network: A Guidebook



Once the photographs have been transferred into your image editing program, you're ready to use the software to manipulate the image as you see fit. Before we consider some of the manipulations you have at your disposal, let's look at an overview of using a flatbed scanner.

### Using Scanners

Scanners have become mass-market commodities in recent times. It's easy to find a scanner for under \$100. For serious applications you probably want to spend more than a bargain-basement price; a \$300 to \$500 scanner is going to have better optics and better included software than a \$75 one. (Scanners usually come with some sort of graphics editor and often with optical character recognition software you can use to convert print materials into editable text files.) Major brand names include HP, Epson, Umax, and Canon.

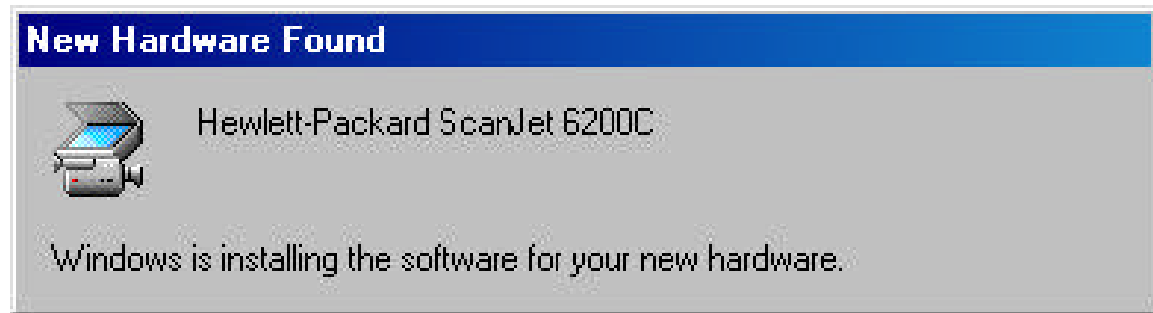
Historically, there were two ways to connect a scanner to a PC: a parallel port or a SCSI port. Neither was desirable; the parallel port was created to support output to a printer, not as an input port. And most PCs lacked SCSI ports, requiring you to install a SCSI controller card just to plug in the scanner. (Macintoshes tend to come with SCSI ports, so that Mac owners were spared this pain.)

PCs (and Macs) built since mid-1998 are likely to include a new port, the USB (Universal Serial Bus) port. Typically a PC will include at least two USB ports (and outboard hubs expand connectivity options). If your PC has a USB port, and you are buying a new scanner, get one that connects via USB.

Under Windows 98, it's especially easy to install the scanner software and connect the scanner via USB. Simply install the software via a simple Setup program, and plug in the scanner when told to do so.



## Building a Community Information Network: A Guidebook



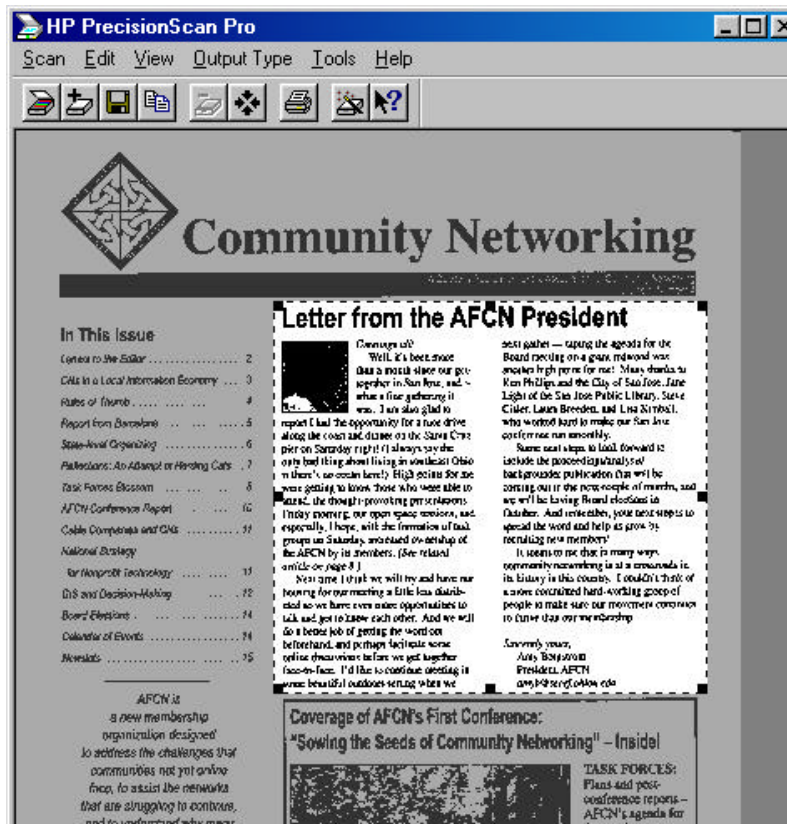
Now you're ready to scan. Take the document you want to scan, place it face down on the platen.



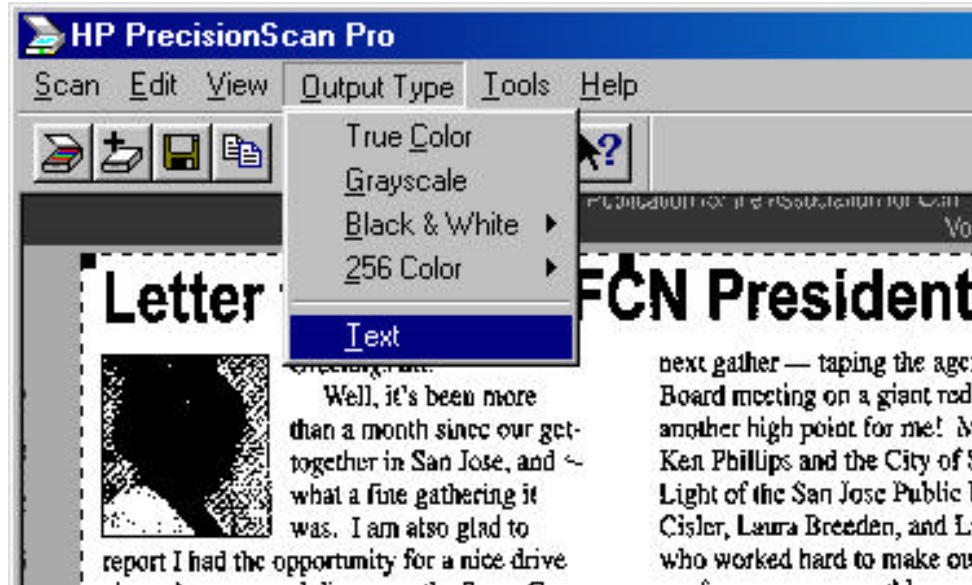
Next, you can preview the scan and use the mouse to select which portion of the available image you want the final scan to cover:



# Building a Community Information Network: A Guidebook



Next, you tell the scanning software what kind of document you're working with. If it's a photograph, you'll want to scan as a bitmap, or image file. Greyscale would be adequate for a black and white photograph or drawing. If we were working with a photograph in this case, we'd probably select "True Color" as our desired output format. If it's a section of text, you'll want to scan it using the OCR, or optical character recognition function, which translates the images to editable text. That's what we're doing in this case, so we select "Text."



When scanning photographs, you'll want to set a scanning resolution appropriate to the use to which you'll put the images. If you will use the photos outside the Web – for instance if you might print them on a high-quality photographic printer – you may want a resolution of 600 dots per inch or even higher.

On the other hand, if your target audience is the Web, a resolution much higher than 150 is a waste of disk space, memory, and processing time as you edit the image. It's an even bigger waste of bandwidth and your users' time to offer files intended for screen display in high resolution. You might scan at 150 dots per inch, manipulate your photo, and then save it at a resolution close to screen resolution.

### Image Editing Software

In Chapter 4 we listed some of the popular image editing programs along with more sophisticated graphics tools. Here we'll concentrate on a shareware editor and versions of the industry-leading commercial editor:

- Paint Shop Pro is a shareware tool that has grown in sophistication over the years. It now competes in features if not in image handling quality with Adobe's flagship product, PhotoShop. See [www.jasc.com](http://www.jasc.com). You can download the tool and try it for 30 days before you decide to register it permanently.
- PhotoDeluxe is Adobe's stripped-down version of PhotoShop. Although it lacks some of the high-end functionality of PhotoShop, it adds extremely accessible, step-by-step controls for invoking its various capabilities. PhotoDeluxe comes bundled with many scanners, and is available at stores and online at a discount.. Photoshop itself costs considerably more but can often be acquired at library or governmental discounts.

## Building a Community Information Network: A Guidebook

What can image editors such as Paint Shop Pro and PhotoDeluxe do for you? Many things!

- Convert among various formats: if you receive an image in, say, TIFF (Tagged Image File Format, a popular format that preserves all image information but consumes large amounts of disk space) you can translate it to JPEG for placing on the Web.
- Rotate images: if you've scanned a photo in turned on its side, you can rotate the image 90 degrees to fix its orientation.
- Resize or crop images: you can edit away unwanted portions of an image.
- Add text or lines: you can insert (overlay) text on top of the image.
- Adjust contrast, brightness, number of colors.
- You can combine images to create montages.
- Apply a variety of special effects, in some cases completely transforming the image into a new, attractive, artistic image.

More sophisticated editors will offer more capabilities, but Paint Shop Pro and PhotoDeluxe can do all of the above. If you find you outgrow their capabilities, you can graduate to PhotoShop or some other tool at a later date.

Here's a sample screen from PhotoDeluxe. Here, we're looking at a lovely lake scene taken with a conventional 35 mm film camera and scanned on an HP scanner.



Let's say we want to transform the image by making it look like it's a print curling up at the corner, to evoke the feeling of turning a page. PhotoDeluxe offers a simple Page Curl tool:

## Building a Community Information Network: A Guidebook



When we invoke that tool, almost instantly our picture is transformed:



You might shrink this image down to a relatively small size – say 50 or 60 pixels wide – and use it as an icon to link to other pages in your Web site. The HTML for your link might look like this:

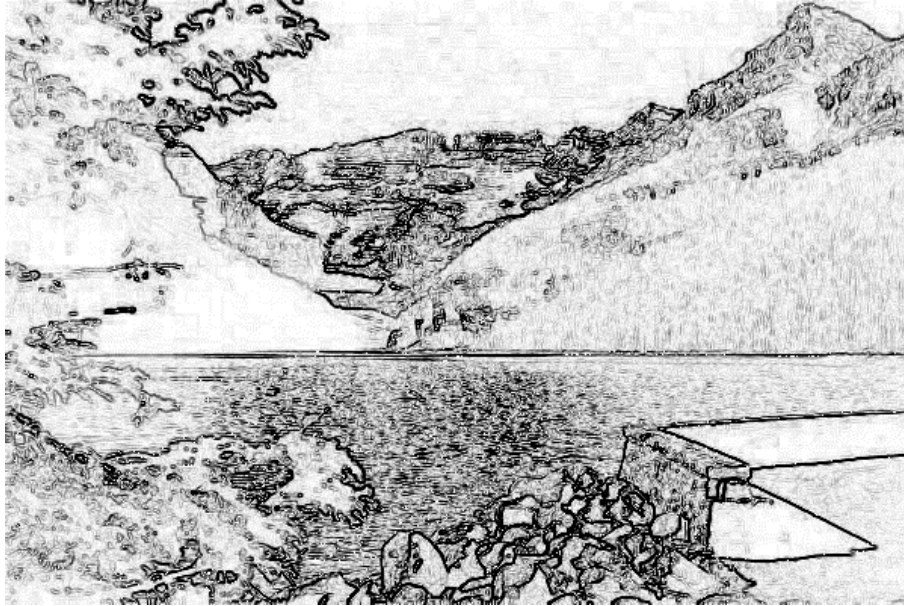
```
<a href="lakelouiseinfo.html">  
  
</a>
```

The `<img>` tag causes the photo to appear on the current page. It's wrapped inside an anchor tag, which makes the whole photo a hyperlink. If the user clicks on the image, the file `lakelouiseinfo.html` will be fetched and displayed next.

PhotoDeluxe can perform a number of artistic transformations. For instance, if we invoke its "sketch" effect, the same photograph is almost magically transformed so that it appears to be line art:



## Building a Community Information Network: A Guidebook



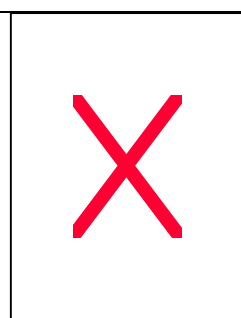

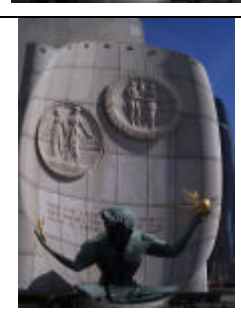


Similarly, we can invoke the Emboss feature to create an image of a courthouse that looks as if an artist prepared it:



Such an image might be usable as a component of a logo, or as a background, or for other applications. You may want to experiment with many of the special effects that your image editing software can perform. For instance, consider some of the special effects available in PhotoDeluxe:

## Buil ding a Community Information Network: A Guidebook

Effect Name	Sample Image	
(Original image)		
Bas Relief		
Crackle		
Twirl		
Sphere		



## Building a Community Information Network: A Guidebook

You may want to experiment with a variety of such effects.

### Working with Selections

As you edit an image, you may want to delete portions of the scene in order to create the kind of graphic your page needs. For instance, you may want to delete the background behind a building so that you can treat the building as a discrete object, to be combined with text or other images in whatever way you desire.

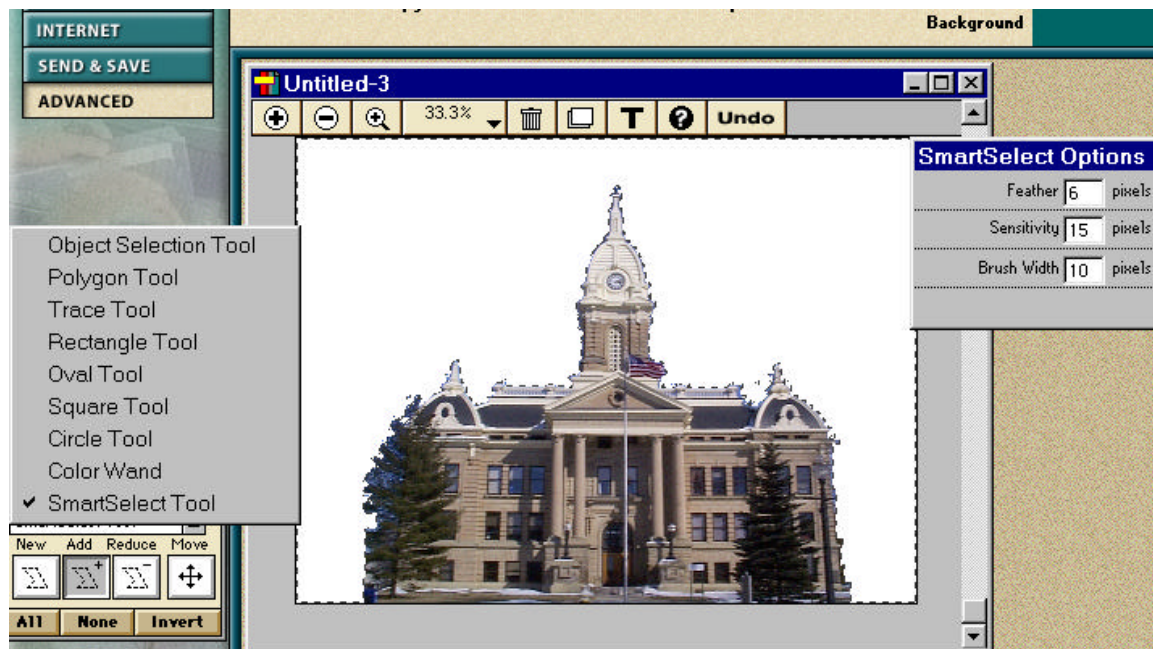
Most graphics editors offer a way to trace around an image, and then to delete unwanted portions. For instance, here we are tracing around the courthouse image, with the goal of removing all parts of the image other than the building itself:



This can be rather tedious, especially if the object you're tracing around is complex, with lots of curves and fine details. Your graphics editor may also provide advanced ways to select portions of an image. In PhotoDeluxe you can invoke a variety of selection tools. For instance, you can point the "magic wand" at a portion of the blue sky, and PhotoDeluxe will automatically select all of contiguous areas in the photograph with that color or similar colors. You can iteratively select and delete portions of the image until you achieve your desired goal.

Here, we have completed the process of marking the boundaries of the courthouse and adjacent foliage in our image, and we've deleted the other parts of the image. At this point, we could "fill" the non-building parts of the image with another color, or even with a textured pattern. Or, we could tell the image editor we want to mark those parts of the image as "transparent." Image transparency is our next topic.

## Building a Community Information Network: A Guidebook



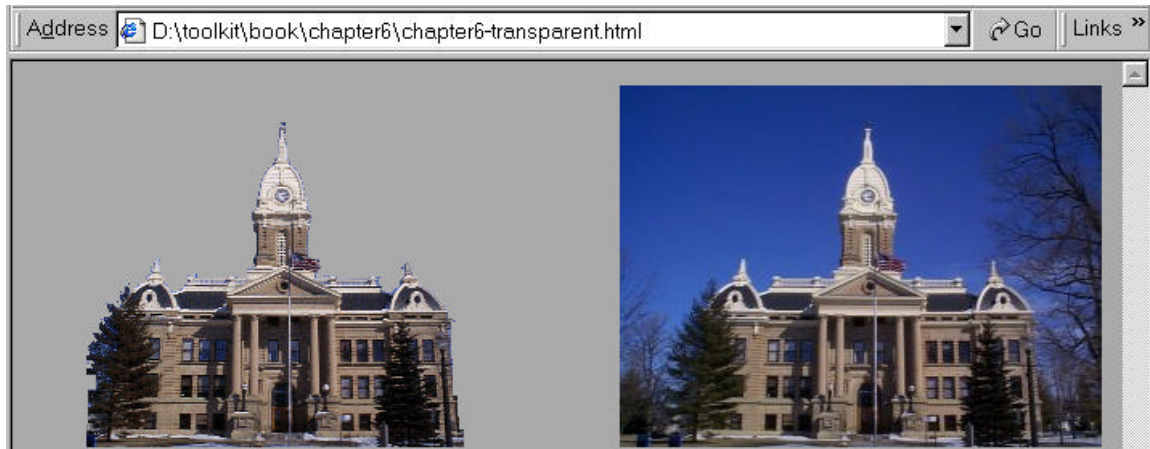
### GIF Transparency

As you surf the Web, you may notice that in many cases images seem to sit atop a page as if they literally blended in with the background. This effect is accomplished by picking a color in the image that you want to be treated as transparent, and then saving the image with “transparency” turned on. The GIF file format supports this concept, and Web browsers know how to deal with it.

If, for instance, you select the background of a portrait and convert it to transparent, the background will be rendered on screen as if it were part of the page’s background color, so that the human subject will appear to be part of the Web page itself. The transparent color will match the page’s background color automatically – no matter what the default background color of the page may be.

Here is a Web page that shows two images: our courthouse photograph saved as a GIF with transparency “on” for the portion of the image we’ve deleted, followed by the original photograph as a JPEG file. (The JPEG format does not support transparency; in any event, we’ve left the blue sky background intact for this image.) We have selected a medium gray background for this page (`<body bgcolor="#aaaaaa">`). The image with the transparency seems to blend into the Web page itself; the sky portion of our photograph takes on the color of the background, which in this case is the Web default of medium grey. If we changed the background of the Web page to, say, red, the sky portion of the image would become red, blending seamlessly with the rest of the page.

In this case, the image on the right, with the blue sky intact, appears as a full rectangular photograph. Neither photograph is “better” than the other; choose the effect you want for your particular purposes.



### Manual Transformations

Most of the transformations we've talked about thus far are accomplished as simple automated "effects," without a lot of manual effort on the user's part. You can also use image editors to accomplish more manual forms of image manipulation. Examples include:

- Airbrushing – removing the unwanted parts of an image by brushing in another color. Paint Shop Pro and other editors offer an airbrush function; you select a color and a brush size, and you use the mouse to "paint" the parts of the image you want to airbrush.
- Most image editors include simple text tools, which allow you to add text in any chosen font atop the image you're working with. This is an extremely common technique, allowing you to transform a photograph or drawing into a logo for your Web site.
- Many editors include drawing capabilities, allowing you to add lines, circles, curves, and polygons to your image. Some drawing programs allow you to create 3D objects and add them to an image.



**Airbrushing (note upper left corner)**

### **Layers**

Modern image editing tools operate on images in “layers.” This simple concept is quite powerful: as you make transformations to an image, you apply changes to successive virtual layers. It’s as if each change were made on a new piece of transparent Mylar, with all of the pieces laid atop one another. The advantage of layers is that it’s easy to apply changes and then un-do the changes associated with a certain layer. When you’re doing a lot of complicated editing to an image, layers can save a great deal of effort, giving you peace of mind that you won’t ruin the basic image while you experiment.

### **Creating Logos**

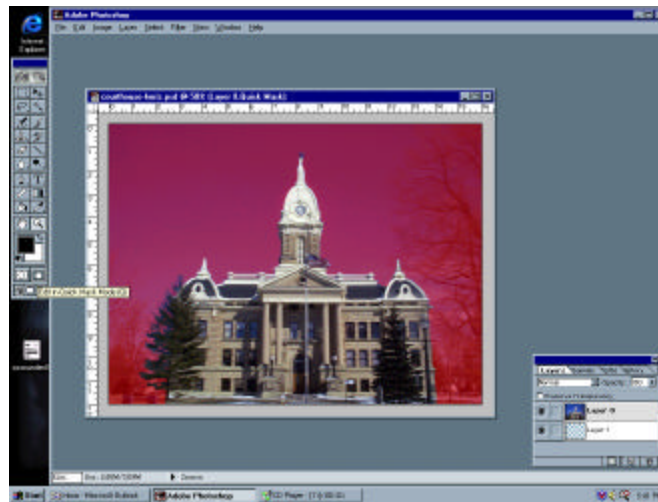
You can use your image editing software to create logos, whether simple small logos that will be used throughout your site, or more elaborate logos with elaborate components such as graphics or photographs. Professional logo designers tend to use a software tool intended for this sort of application, such as Adobe Illustrator. Such tools include highly specialized drawing tools, allowing you to apply a variety of effects to textual and graphical elements. For instance, they make it easy to render a text block into a circular pattern. These tools often come with large libraries of text fonts, which make it possible for you to choose interesting fonts outside the familiar world of Times Roman and Arial.

For simpler logos, you can accomplish quite a bit with a graphics editor such as Photoshop, or even tools such as Paint Shop Pro and Photodeluxe. Let’s revisit our courthouse photograph and see how we can use Photoshop to turn the image into a logo for a Web site.

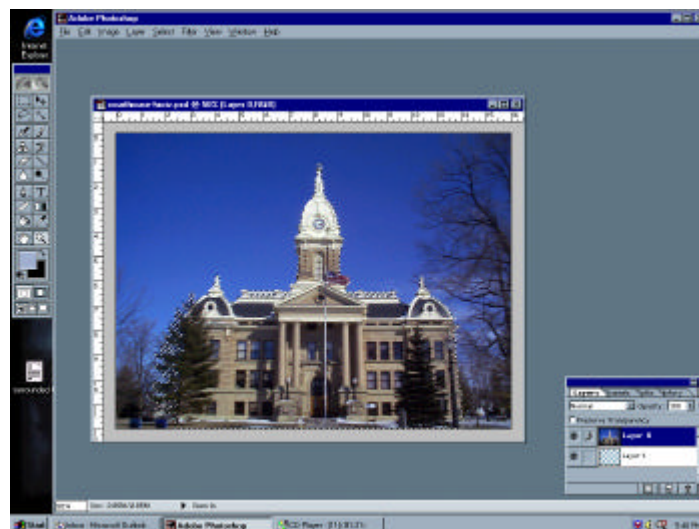


## Building a Community Information Network: A Guidebook

Photoshop has a “Quick Mask” tool that makes it relatively easy to select a portion of the image in a fashion similar to the “Smart Selection” tool we used in Photodeluxe. We use this tool to “grab” the courthouse outline:

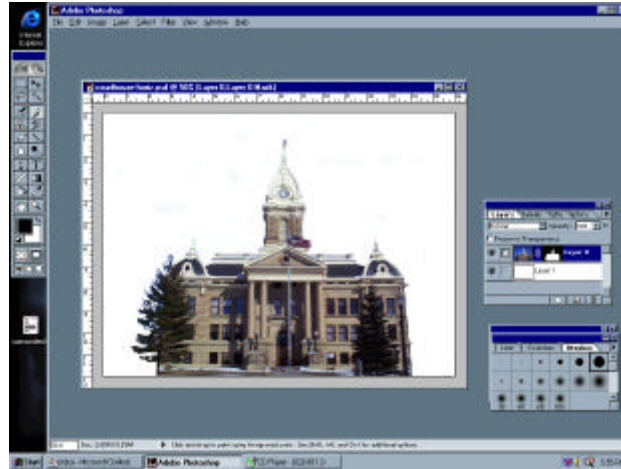


Next, we use “View Selection” to verify that we’ve grabbed the image portion we want:

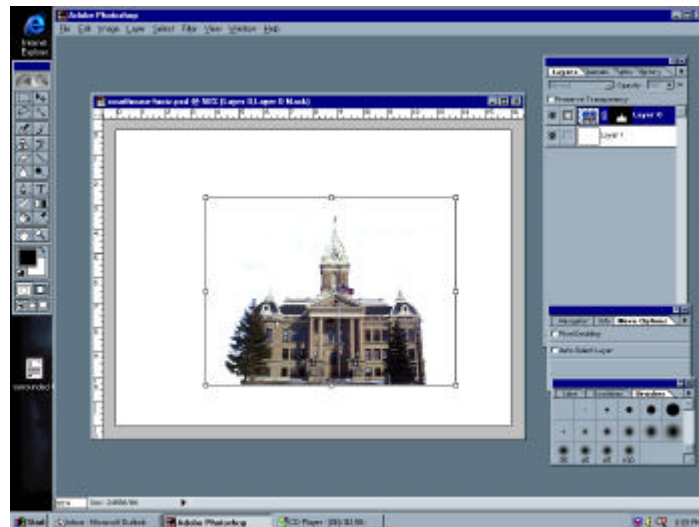


Next, we use “Create Layer” to make a new layer that consists of the selected portion:

## Building a Community Information Network: A Guidebook



Next, we use Scale Image to change the size of our courthouse to the desired size. In general, it's a good idea for logos to fit well within the smallest monitor size, 640 X 480 pixels.



Next, we add desired text to the logo using the Text tool (signified on Photoshop's toolbar by the capital T button):



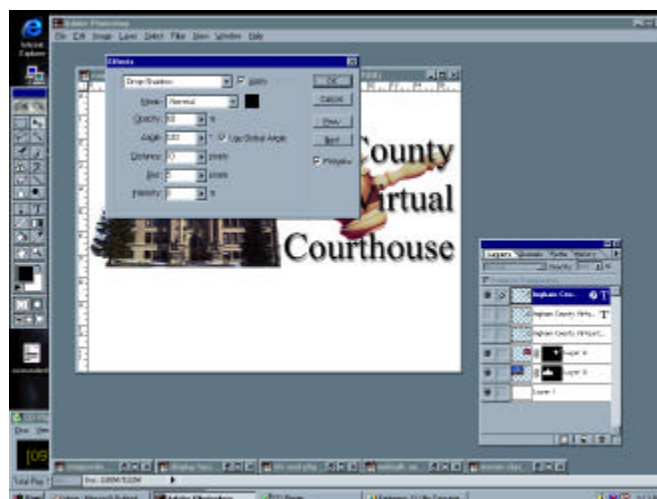
## Building a Community Information Network: A Guidebook



Next, we add an image of a gavel to the logo. (In this case, the gavel comes from a commercial clip art collection marketed by Corel.)



In looking critically at the logo, we notice that the text appears somewhat boring. We use the “Drop Shadow” effect on the text, which adds a three-dimensional feel to the letters. (This is a very commonly used effect in Web pages and in graphics work in general.)



## Building a Community Information Network: A Guidebook

At this point, we have a logo that's suitable for use on a "splash screen" (initial page) of our Virtual Courthouse Web site.



Of course, this is a matter of taste. One could decide this isn't the best logo, and choose to alter any of the elements. Alternative approaches might include:

- Select a different photograph – a close-up of the building, or photo taken from a different angle.
- Use a more appealing font for the text.
- Choose a different piece of clip art than the gavel. A virtual courthouse might offer citizens information about much more than court cases (elections, property tax, county commission meetings minutes and announcements, county business, etc.) and therefore you might feel the gavel is too narrow a metaphor. You might choose an image of a group of people, or a montage depicting a variety of relevant concepts.
- Don't use a photograph at all; use line drawings of people using courthouse services, or perhaps even abstract shapes.

Logo design in particular, like Web site design in general, sometimes can be a controversial aspect of building your site. Many sites find it best to find someone talented at making logos, and have that person create several competing designs from which the team can select the "best" choice. You might hire a graphic artist to design your logo, or you might ask a local public relations firm, advertising agency, or college design class to donate assistance in designing your logo.

### Thumbnails

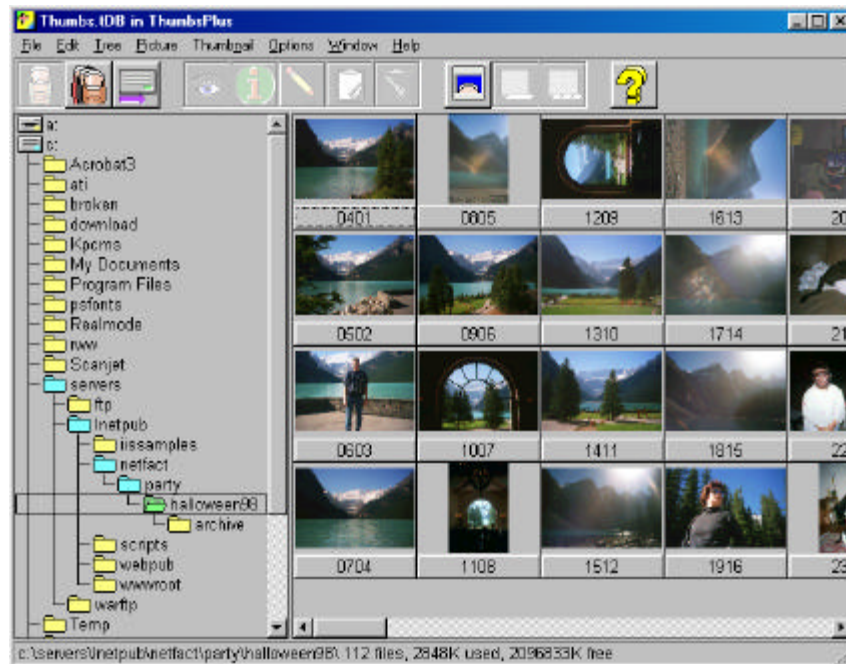
You may want to use a simple HTML trick to deliver images efficiently – the "thumbnail." This approach is popular for gallery applications, where you offer the viewer small images that don't take a long time to load. If a viewer likes a particular image, he or she can click on it to see the larger version.

## Building a Community Information Network: A Guidebook

For a thumbnail, you would link not to an HTML file, but to another image file. For instance, you might have this HTML fragment:

```
<a href="lakelouisebig.gif">  
  
</a>
```

Thumbnails are such a popular technique that there is even a tool to automate creating an HTML page and a collection of thumbnails. Known as Thumbs Plus, this shareware tool will create thumbnails and the HTML that refers to them for an entire folder of images.



### Optimizing Images

The size of your image files can have a major impact on the performance your users perceive. A popular page may seem to be slow to a large number of users simply because the included inline images take time to download.

If a page is burdened by large image files, you can address the problem by adopting the thumbnail scheme described above, or you can undertake to make your image files more efficient. Some image editors include tools that will “optimize” an image file by analyzing the image and looking for ways to alter the digital representation of the image to minimize file size while preserving as much image integrity as possible. Other tools serve as standalone image optimizers. These tools can reduce the file size of a large image dramatically.

Other tools have the specific function of optimizing GIF images. Such tools are available for use on the Web, and some as tools you download. For instance, GIF Cruncher is available

## Building a Community Information Network: A Guidebook

as both a Web-based service ([www.gifcruncher.com](http://www.gifcruncher.com)) and a tool you can purchase online. The Web based service allows you to upload a GIF you want to optimize; it will perform the optimization, report the percent savings (and time savings for a user on a 28.8 kilobit/second modem) and offer you the ability to download the optimized file. Depending on the characteristics of the image, you might be able to save 10 to 50% of the size of your image. For popular pages, the effort can be worth it in improved download speed.

Also you should always keep in mind that the JPEG format typically compresses photographic and some other complex images with greater compression while retaining image integrity better than the GIF format can accomplish, even with an optimizer.

### Animated GIFs

The GIF format includes the capability to incorporate multiple frames in a single image file. In effect, GIF can be a rudimentary movie format. Animated GIFs are tremendously popular in banner ads. Alas, animated GIFs often are misused; too much animation makes a page undesirable to look at.

Of course, there are examples of tasteful animations. For instance, one of the Toolkit demonstration sites, Greater Rochester History Online, uses an animated GIF to cycle through a series of historic images of the community.



When the user retrieves this page, the entire image file loads one time onto the user's computer. Then the Web browser shows the first frame of the GIF, then the second, and so forth. No additional network activity takes place while the browser cycles through each of the images in order. In this case, the GIF file also contains a "loop" instruction that calls for the animation to restart at the first image after the last one is displayed. The animation will



## Building a Community Information Network: A Guidebook

continue indefinitely, until the user visits another page or interrupts animations using a browser control.

The creator of this page, Larry Neal, used an image editor to render transparent the area outside the oval, and carefully applied the same editing to multiple images. Then he used an image editor capable of GIF animation to place these separate image files into a single GIF file.

For instance, Paint Shop Pro comes with an associated tool, Animation Shop. With a GIF animation tool, you paste the desired frames in sequence, and specify the number of milliseconds of delay between frames, and whether you want the “movie” to loop. Here is what that editing window would look like in Animation Shop:



Each frame consists of a carefully-digitized image. Because the historical images have been set to a consistent scale with an identical oval mask, they make a consistent, professional image animation – even though this isn’t an “animation” in the traditional sense of animated characters or objects. Each frame is set to display for 300 milliseconds (about 1/3 of a second).

The result is not jarring or distracting, as some overly-neon GIF animations might be. Instead, the result is tasteful and totally in keeping with the historic orientation of the Rochester history site. As the site visitor looks at the page, he or she gains an intuitive understanding of the nature of the site’s content.

A slight variation on the Rochester example would be to use GIF animation to present a more traditional slide show. In this case, you would probably choose to offer larger individual images, and you would select a longer interval between slides. There are a number of slide show technologies available, including the RealPix format from Real Networks as well as a variety of specialized formats. They offer the viewer greater control over the “playing” of the slide show; animated GIFs start and play in order with no user control afforded. However, formats such as RealPix require the user to have the appropriate plugin installed.

GIF animations offer advantages over other Web animation methods, as we saw in Chapter 3. The key points to remember are:

## **Building a Community Information Network: A Guidebook**

- GIF animations work in every browser without any plug-ins.
- A GIF animation can be very efficient if optimized for size: once it's downloaded, the browser "plays" the animation without any more network traffic, and with very low load on the viewer's computer.

One can accomplish many other effects with GIF animation – cartoon-like animations, progressive display of letters in a headline, etc. There are a number of GIF animation galleries that can help you get a feel for the possibilities. Here are a couple:

- GIF Animations by J. Scott Hamlin:  
<http://www.eyeland.com/animgal/allgifs.html>
- First Internet Gallery of GIF Animation:  
<http://member.aol.com/royalef/galframe.htm>

### **A Warning about Case and File Names**

For reasons known only to their authors, many graphics editors have the nasty habit of converting file name extensions to upper case. For instance, if you save a file in GIF format using PhotoDeluxe, you may end up with an extension of .GIF instead of .gif. Because Web servers and browsers pay attention to case when dealing with file names, you will not find the file if you code an HTML reference to "courthouse.gif" when the file's name is "courthouse.GIF". Many HTML authors use all lower-case letters when coding file names; you may have to re-type the file name when you save it using an ill-mannered tool.

Also, note that some DOS/Windows FTP programs will make odd assumptions about file names or extensions when transferring files. For instance, ".gif" extensions may be converted to ".GIF"; this yields the same problem that occurs when a local tool converts case while saving to local disk.

Finally, note that older versions of Windows graphics editors may not be able to handle long file names – names with more than eight characters or file extensions with more than three characters. Tools released since 1996 should not exhibit this limitation.