Digital Images: Basics

Lesson 1: Introduction

Introduction to digital images

In order to produce original multimedia works, you need to be able to take "hard copy" graphics (artwork, photographs, etc.) and get them into the computer as digital images. The general term for converting data into computer format is **digitizing**, and the way to digitize graphics is by scanning them.

If you are lucky enough to have a digital camera at your disposal, you can avoid having to scan your photos, because the camera saves them in digital format rather than on film. When you have filled your camera's storage, you can easily transfer the graphics files to your computer's hard disk.

In the Digital Images tutorial, you will learn about scanning as well as the basics of digital photography. Once your images are in your computer, you can use Photoshop (or other graphics applications) in creative ways to incorporate graphics into your multimedia projects.

Lesson 2: Resolution

What is resolution?

Resolution is a measure of how clear and sharp an image is; it is measured in "dots per inch". When a scanner scans a graphic or a digital camera takes a picture, the image is stored as a pattern of discrete dots. Each dot stores information about the graphic, and so the more dots there are per inch, the more detailed the stored information.

Note: Technically, the term **dots per inch** refers to printer resolution (hard copy format). When referring to digital formats, the correct term is **pixels per inch**. But many people use the terms interchangeably.

How do I choose a resolution?

The more information that's stored, the bigger the image file will be. For this reason, selecting the appropriate resolution is always a balancing act between quality and file size. The choice you make will depend mostly upon what you will be doing with the image and in what medium it will eventually be reproduced.

It will of course also depend upon the input and output capabilities of the equipment you are working with. See the Scanning and Digital Photography sections for more detailed guidelines.

Lesson 3: Image Formats

What format should I save my image in?

When you digitize a graphic, you can save it in one of several formats. Which format you choose will depend upon what the graphic will be used for. What follows is a list of the most common graphics types, and their purposes.

- Photoshop Format: **PSD** files are Photoshop specific. Since they preserve layer and channel information, users can continually edit and adjust images using the PSD file. It is a good idea to save a graphic as a PSD file if you anticipate ever using it for other purposes in the future. From Photoshop, you can save a PSD file in all of the other common formats.

- CompuServe Graphic Interchange Format: **GIF** files are most commonly used for Web-based line art or graphics with simple lines and few gradations, such as logos and buttons. Since this format can only support a maximum of 256 colors, GIFs are also popular for images that have only a few colors.

- Joint Photographic Experts Group: **JPEG** files support full color palettes and can properly represent fine color gradients; for that reason, the best format is JPEG when saving photographic images to use on the Web. A word of caution when using JPEG format: Every time a JPEG file is closed, the file recompresses and discards image data; therefore, editing and adjusting should be done using the PSD file so image quality is not lost with multiple recompressions.

- Tagged Image File Format: **TIFF** files are very high quality, but they are often quite large. TIFF files can be read by both Windows and Macintosh computers. TIFFs are ideal for images that will be used in commercial printing projects.

- Portable Networks Graphic: **PNG** files are a relatively recent graphic format, designed for use on the web. However, not all web browsers recognize PNG files, so be aware of this if you are creating graphics for use on the web. Currently, GIF and JPEG are the only graphics file formats practically universally recognized by web browsers.