

# Copying as You Go

## Making Scanning Easier

By Jelena Lewis

From the room-sized mainframes of the early 1950's to the laptops of the 1990's, the idea that smaller is better, or at least more comfortable, has gained momentum among digital technology users. The industry has been catering to the increasing number of mobile workers who carry their office wherever they go. Cell phones, pagers, notepads, and palm-top computers are some of the gadgets available to this new breed of worker. So are portable scanners.

For teachers, presenters, and students, scanners offer an easy way to incorporate images into a presentation and enliven an otherwise dry exchange of information. Modern scanners have moved away from the complicated procedures of the older models with the introduction of parallel or USB interface that offer true plug-and-play setup. Operations have also been simplified. With the single click of a button, the new scanners can copy, fax, or e-mail a document, and open it in image-editing or word processor file. Some scanners are still based on traditional CCD (charge-couple device) technology that uses a semiconductor to capture and digitize the image. The image is then passed through an elaborate lens-and-mirror optical system. The newer technology, called CIS (contact image sensor) replaces the lens-and-mirror with a single row of sensors illuminated by light-energy detectors. Although CIS scanners use less power and can be much thinner than CCD units, they generally do not have the same quality of image. However, they are very useful when the process does not require artistic results.

### A quick glossary of scanning terms:

There are three main types of scanners: (1) flatbed scanners that use a technology similar to a copier machine; (2) slide scanners that, as the name says, scan slides; and (3) drum scanners that use a laser technology. Most of us will use flatbed, or regular scanners, while the other two types (and the 3-D scanners) are geared toward graphic professionals. Buying a scanner may be threatening for those who were not initiated in digital terminology. Overall, a scanner qualification will include the following terms:

- ⇒ *DPI (dots-per-inch)* - although this term should be reserved to describe printer resolution, it is often used in relation to scanners. As a rule-of-thumb, the higher the DPI, the better the image resolution. By doubling the number, the resolution actually becomes four times larger.
- ⇒ *PPI (pixels-per-inch)* - PPI is the correct term to indicate a scanner resolution, and refers to the number of pixels (the minuscule dots that compose an image), that the scan may reproduce. As with DPI, the higher the PPI, the better the image resolution and larger the file.
- ⇒ *SPI (samples-per-inch)* - is sometimes used in scanner's ads in place of PPI.
- ⇒ *Moiré Pattern* - Moiré is an interference of two patterns in one image and appears on the screen as a checkerboard pattern that interferes with the quality of the image. Some scanners will correct for moiré patterns.
- ⇒ *Real resolution* - the amount of PPI the device can actually scan (remember, the higher, the better).
- ⇒ *Enhanced resolution* - some scanners advertise their "enhanced resolution" power. Enhanced resolution means that the scan takes the real resolution and multiplies the number of pixels it sees in order to blow-up the image. However, this does not improve image quality and should not influence your choice when buying a scanner.
- ⇒ *OCR (optical character recognition)* - scanners equipped with OCR software can read the text off a page and save it as an editable file, rather than an image file. This file can then be edited with most word processor software, such as Word Perfect and Microsoft Word.

### Portable Scanners:

A new breed of small, portable scanners are entering the market. Some are the size of a suitcase, while others are slightly larger than a pen. The following are a few examples of portable scanners currently on the market.



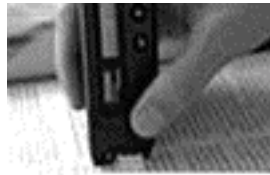
*Microtek ImageDeck Portable Scanner*, from Microtek Lab Inc. ([www.microtek.com](http://www.microtek.com)) looks like a small suitcase (13"x4.8"x18.9") and weighs 15 pounds. The scanner can function independently of a computer, requiring only that a

power source is available. It has an optical resolution of 600x600 dpi with a maximum scan size of 8.5x11.7 inches. Although it cannot scan legal size or larger papers, it has the ability to enlarge small images to letter size dimensions. The scanned color and gray scale images are saved as JPEG files, and black-and-white images are saved as PCX files. A well-organized front-panel facilitates the scanning process, enabling the user to adjust the scan for color, compression, and resolution. The default is a black-and-white mode, with 300-dpi resolution, a letter-size scan area and no compression. ImageDeck contains two built-in disk drives: one for the regular, 1.44 MB, 3.4-inch floppy disk, and a zip drive. Printers and portable hard drives can be attached to the side panel. ImageDeck comes with a software bundle that includes: Ulead PhotoImpact (image-editing), Caere OmniPage (OCR) and Caere PageKeeper (document management and storage).



*C-Pen 600*, from C Technologies AB ([www.cpen.com](http://www.cpen.com)), resembles a highlighter pen and weighs no more than 5 ounces. It combines a miniature digital camera, OCR and Intel StrongArm processor. It has 6-MB memory. Despite its size, C-Pen performs optical character recognition on text between 7 and 20 points high. It can translate scanned words to and from English, French, German, Spanish, Italian and Swedish, depending on the language dictionaries installed on the device (C-Pen comes with one dictionary; additional dictionaries cost about \$50). It has also other features, such as an address book application that holds up to 250 contacts, and

C-Write, that enable users to write digital notes and save them. C-Pen uses an infrared communication to transfer information to a PC. It operates with two AAA batteries, which last an estimated three to four weeks of constant use. Files are compatible with Windows 95 and higher.



*Siemens Pocket Reader*, from Siemens AG Austria ([www.pocketreader.com](http://www.pocketreader.com)) weighs about 4 ounces and has 2.5MB RAM and 5-MB hard disk space.

The scan reads 8-to-16 point text in common fonts and can store about 40,000 characters. The Reader can be connected to a PC to upload scanned texts, which can be transferred to word processors, spreadsheets and database software. The Pocket Reader software recognizes words and translates to and from German, English, French and Italian, depending on the dictionary installed. The recognition rate is 95 percent, which can be increased to 99 percent when a spell checker is added. Six function keys control the entire operation. Pocket Reader can record up to 20 pages of text and transfers the data by serial cable to a PC. This is quite an inexpensive scanner (about \$100) that works with Windows 95 and higher.



*HP CapShare 910*, from Hewlett-Packard ([www.capshare.hp.com](http://www.capshare.hp.com)), is another hand-held scanner that works independently of a PC. It weighs 12.5 ounces and runs on

two rechargeable nickel hydride batteries, which come bundled with the unit. CapShare can scan approximately 100 documents and store about 50 letter-size pages in one battery charge. A typical letter-size page takes approximately 6 seconds to scan. The scan has a friendly interface and is easily manipulated. The sensor can be swept over the document from top to bottom or side to side, as the user feels more comfortable. It scans in gray scale documents as large as 119 square inches. The image is compressed through firmware and stored in the memory as a data file that can be viewed on the built-in LCD, or sent as a PDF or TIFF file via serial cable or IR port to a printer or a computer.

Most hand-held scanners are easy to use, but they may be difficult to hold in the correct position. If the hand shakes, the image will be distorted. Therefore, hand-held scanners are not recommended when the goal is to produce an image of artistic quality. However, they can be quite helpful for the most frequent uses. For instance, a teacher or a student can easily scan pages or illustrations from a book that cannot be checked out of the library. Or rather than cutting a magazine to take one picture or an article, the teacher can scan the needed objects and leave the magazine intact for further use.