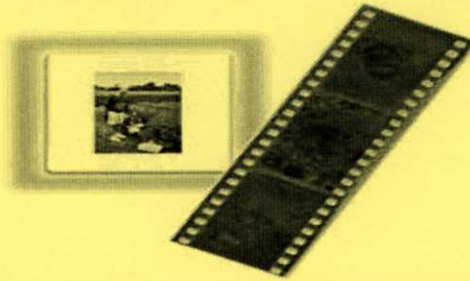

Digitizing



Archiving

Digitizing & Archiving Slides & Negatives

CIT

Center for Instructional Technology

Scanning- Digitizing and Archiving your Slides and Negatives

This workshop will cover how to scan traditional photographic slides & negatives and convert them into a digital format. By scanning our older negatives, we can preserve and archive digitally and also edit and manipulate the pictures in Adobe Photoshop and Photoshop Elements, or other editing software. We are able to scan traditional 35mm slides, 35mm, medium format (2 ¼ x 2 ¼, 6 x 4.5. cm, etc...) and 4 x 5 sheet film. We will cover how to scan, optimizing the scan, proper resolution, and file choices. In CIT we will be using the Epson 4870 scanner, which scans reflective (prints, documents) and also negatives and slides using the adapters.

The 4870 scans at a max. optical resolution of 4800 dpi and interpolated up to 12, 800 dpi.

Before scanning negatives and slides it is important to remember some several key issues:

- The **Resolution** you are scanning at.
- What is the final outsize?
- The type and size of film you are scanning
- Making sure the negative is clean and as free from dust as possible before starting.

When scanning negatives and slides it is best to scan at the highest (or close to) resolution possible. A 35mm slide or negative is relatively small, so if we plan to increase the size of this in the printed version, we need to start with a high dpi (dots per square inch) scan, so that when the image is printed the dots (pixels) will spread out to fill the given space and still give us an acceptable image. The file size and time to scan the image will increase, but this is needed to have an acceptable image. Remember its okay to res down but not to res up.

ScanningResolution

The higher you make your DPI (dots or pixels per square inch), the larger you will be able to print the image. For example a 35mm negative would produce results:

Scanning Res.	2000DPI	3000 DPI	4000DPI
Pixel Dimensions	2710X1800	4050X2650	5420 X 3600
Megapixel Resolution	4.9	10.7	19.5
File Size	14MB	31.5MB	57MB
Print Size @300dpi	6X9	8.8X13.5	12X18

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Scanning Resolutions-dpi

35mm Slide or Film 2400 or higher

120mm film-2400 or higher

4x5 film- 2400

Getting ready to Scan

- ✓ Before connecting or disconnecting the document cover's cable, make sure the scanner is turned off.
- ✓ Next the plug/ cord in the back of the scanner needs to be connected.
- ✓ When using the 4870 for scanning negatives and slides, the document cover on the inside of the scanner top (transparency unit) needs to be removed.
- ✓ Turn on the scanner
- ✓ Select the proper film holder for your scan
- ✓ The shiny side of the film should be facing down (the emulsion side facing you)
- ✓ Open holder, Place film in holder and close the holder.
- ✓ Use canned air to remove dust from negatives and slides.
- ✓ If scanning slides, place holder on scanner, then place slides into spaces.
- ✓ Make sure that the calibration space at the back of the scanner is uncovered for both negatives and slides.
- ✓ Close the scanner cover

The next step involves opening up image editing software to actually do the scan. This can be done using Adobe PhotoShop or PhotoShop Elements. Open either program

Go to **File > Import > Epson 4870**

This will open the Epson scanner dialog box. There are three **modes** to choose from when scanning.

Full Auto Mode- does everything, good but no control

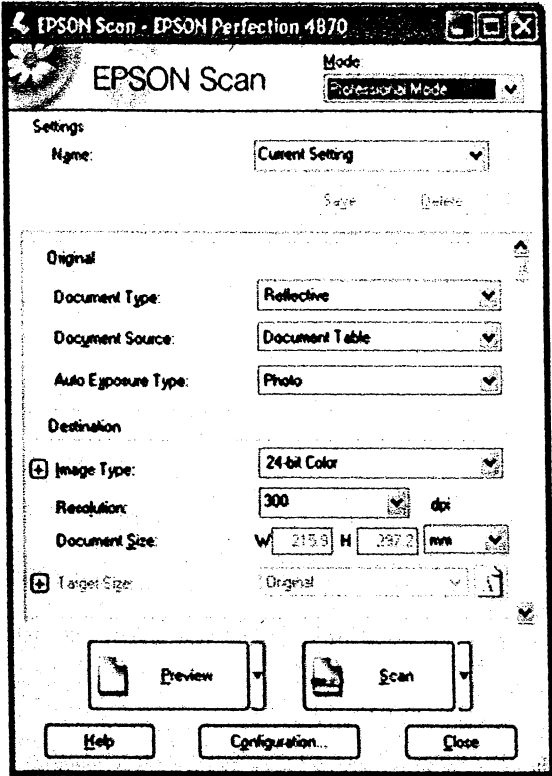
Home Mode- good, less control

***Professional-** total control (recommended)

In the Full Auto Mode, you can scan 35 mm color film and 35 mm color slides. If you want to scan monochrome negative film, Medium Format film, or 4 x 5 inch film, switch to the Home Mode or Professional Mode.

There are many choices to make when scanning, it may seem like a lot of work at first, but once you get used to it, it'll be fast and easy and your scans will be of much higher quality.

Scanning Dialog Box



Document type: Reflective or film- choose the type

Destination:
Image Type : hold down arrow for choices
*24 bit color
Color Smooth
*16bit grey scale * most used and recommended
8 bit grey scale
*Half tone
B/W

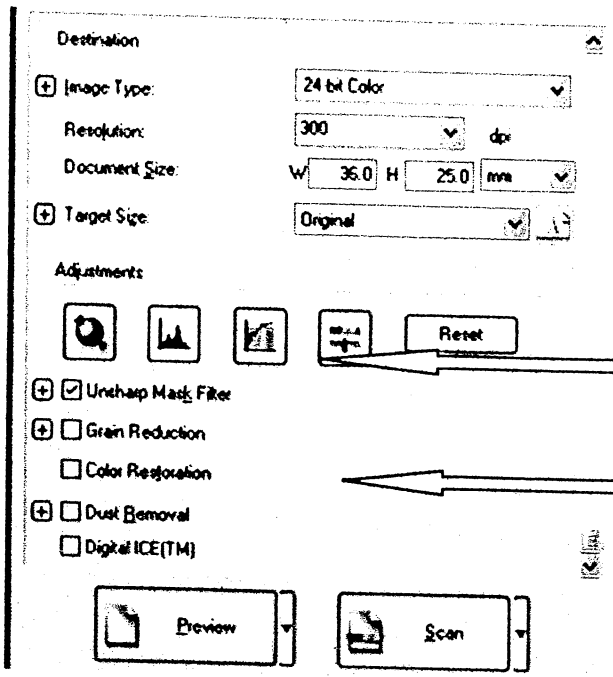
Resolution: 50 dpi -12,800

Press **Preview** to begin part one of the process.

Black and White Film:
You may think when you scan black & white film, that it would be best to select greyscale, but if you scan the negatives in RGB, you will actually have more control of them when you begin to edit in Photoshop. Grey scale is fine, but RGB does take a bit more work, but well worth it.

High Res Scanning -4800 dpi

If you scan a 35 mm film and enlarge the scanned image to the A2 size or other larger printed format, select **4800 dpi** from the Resolution list to get a fine quality in texture. Be sure to select **Original** for the Target Size setting



After preview is completed, you will be able to see the image and make **adjustments** prior to the actual scanning.

- Auto Exposure
- Histogram
- Curve image adjustments (do it yourself or preset auto adjustments)
- Tonal Correction

Click on each one to use controls located inside

There are also **adjustment boxes** to check for more controls. Place a check in appropriate control you wish to use. Some may be grayed out depending on choices available for types being scanned.

Unsharp mask filter- improves the image sharpness

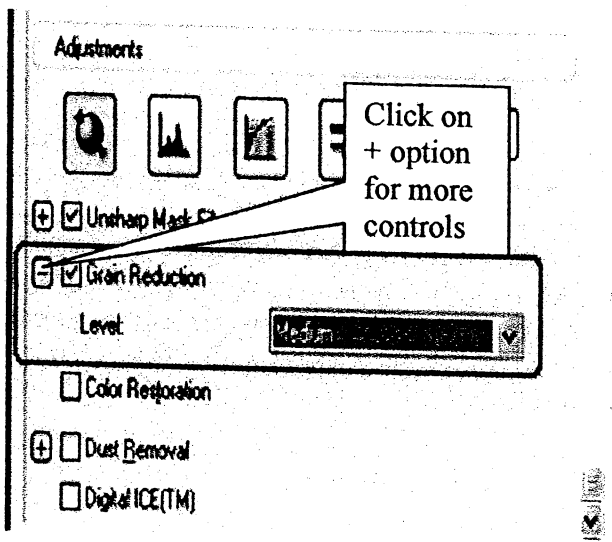
(Descreening filter-removes moiré patterns- only for reflective)

Grain Reduction- reduces the appearance of grain, makes image look softer. Click on + for options within areas.

Color restoration- only for reflective

Dust removal- for film. Removes appearance of dust

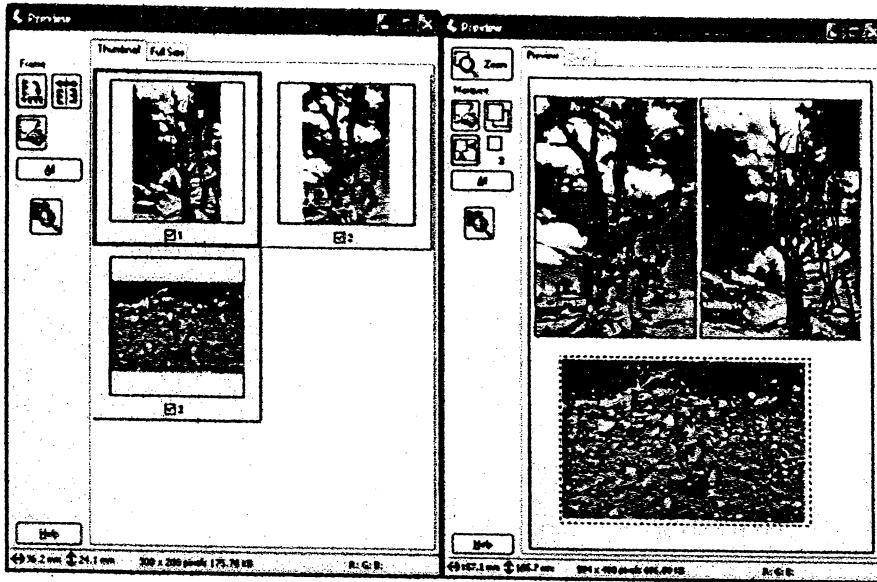
Digital ICE- technology to remove dust and scratches from film and photos. Results do not appear in preview. Increases scanning time. Does not work with B/W positive & negative films.



If you want to find out more about **Digital ICE** go to: <http://www.asf.com/products/ice/FilmICEOverview.shtml>
 You can find lots of sample and technical explanations on how it all works

Batch Scanning If you have several images, slides to scan Batch Scanning is the way to go.

In preview, Espon Scan automatically locates the target images and then preview the images as thumbnail images. Select the number check box of an image you want to scan. Or you will select the images to be scanned by using the marquee tools




Automatic Selection

Marquee Tools

A marquee is a rectangular frame which you draw around a portion of a previewed image to select it. So if there was something to crop out, you could just select what part of the image you wanted to scan. You can make up to 50 marquees and use them to select an area you want to enlarge using the **Zoom Preview** button.

Only one marquee in one thumbnail image can be made.

To create a marquee, move the pointer over the image in the Preview window.

The pointer  becomes a set of cross-hairs. +

Holding down the mouse button, drag the cross-hairs over an area of the image you want to scan, then release the mouse button to create the marquee.

The frame around the marquee appears as a moving dotted line, indicating that it is active, which means that it can be resized.



When the mouse pointer is placed within the marquee (the frame of the selected image area), it changes to a hand. You can click and drag the marquee anywhere in the Preview window. If you drag a hand while pressing the **Shift** key, the marquee will be limited to vertical or horizontal movement. If pointer is placed on the edge of the marquee, it changes to an arrow allowing you to re-size the marquee. If you drag an arrow while pressing the **Shift** key, the marquee will be resized proportionally.

This marquee is the area that will be scanned. Again, you can scan up to 50 marquees, but this will take some time. But using the Batch feature is helpful when scanning a large number of images at a time.

Once choices are made, we are now ready to begin the scanning process. Scanning time will be dependent upon resolution, image size, and adjustments made and selected. **Note:** A 35mm film scan at 2400 dpi without Digital ice normally takes about a minute and a half, but with ICE applied it jumps to ten minutes and twenty seconds according to Epson. It also will increase the file size from 63 MB to 117MB. Grab a coffee, a magazine and wait! Or work on something else while it scans. Also, try not to run other too many other programs while scanning, it could cause a crash if memory runs low.

Once the image is scanned it will open up in the software you initially selected, and you can begin to work on it at this point for more editing or printing. More adjustments may need to be made on the image, but you should have a good scanned image to work with.

Archiving -Saving and Storage

Once the images are worked on and saved they have to stored and saved somewhere. Photos will quickly take up valuable space on hard drives if not archived and filed some way. Many options exist for keeping our images. But the industry is changing and there is much discussion on what will be available to read this information in a few years. Will something new replace what we are using at this point in time? Will our data be stored safely, will it be readable in ten years?

Common storage options today:

CD's- Compact Disk - The two most common are **CD-DA** (audio) and **CD-ROM**, holding 74 minutes of music or 700 MB of data

CD-R –write once

CD-RW- rewritable

Images, files are burned into the CD by a CD/DVD burner and software that records info into the layers of the CD/DVD for storage.

DVD is very similar to a CD, but it has a much larger data capacity. A standard DVD holds about seven times more data than a CD.

A DVD can have up to four layers, two on each side. The laser that reads the disc can actually focus on the second layer through the first layer. Here is a list of the capacities of different forms of DVDs:

Single-sided/single-layer	Single-sided/double-layer
7.95 GB	4.38 GB
2 hours	4 hours
Double-sided/single-layer	Double-sided/double-layer
8.75 GB	15.9 GB
4.5 hours	Over 8 hours

DVD-R -write once
DVD-RAM- rewritable
DVD-RW- rewritable

Other storage options- External Hard Drives, massive storage, variety of sizes. Portable hard drives for traveling and storage of pictures.

Archival considerations: How long will they last?

Most CD's claim to last 100 years, and DVD's less, but who really knows.

- **Environmental factors:** High temperatures, humidity, light,
- **Physical damage:** scratches, fingerprints, cracks, ink leaking thru from front
- Keep stored away- jewel cases, don't place them next to one another, keep in sleeves- like you would handle negatives.
- Buy longer life Cd's- Verbatium Data Life, Mitsui Gold. Maxell, TDK.
- Burn two CD copies- keep one stored in fire safe location.
- Will there be mechanisms around to read them in 10, 20, 30 years? We have witnessed a huge technology boom and changes right before our eyes: Remember the 8 -track tape, VHS tapes (still around- but not for long), the 5 ¼ & 3 ½ floppy disk, the SyQuest drives ?
- Another thing to add to your to-do list: To keep upgrading your data- whether it's VHS home movies to DVD, or important data to the newest archival mechanism. All of these things though take time and money.