Flatbed and Film Scanning

A User's Guide

This document describes how to operate the flatbed and film scanners located on the second floor of Meyer Library. It was written for the *Scanning* workshop, which is offered to Stanford students and staff in the Multimedia Studio on the second floor of Meyer Library. For more information about this workshop, please see the Web at http://acomp.stanford.edu/studio/sched.html.

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Before You Begin

The Epson Perfection 1200U flatbed scanner and the Kodak Professional RFS 3600 film scanner let you digitize images that can be used in print publications, displayed on the desktop of a Macintosh or Windows computer, or used in Web page designs. While the Kodak scans film and slides, the Epson scans photographs, artwork, and illustrations taken from books, magazines, and newspapers.

Scanning Technologies

Flatbed and film scanners flash a bright light at the image being scanned. The illuminated image is processed by a digital sensor that interprets color information and is converted into an editable bitmap image file. (For more information about bitmap image files, see "Bitmap Files" on page 2.) The scanner has a software interface that allows you to crop an image before creating a final digitized file. In addition, you can scan images in color or grayscale (e.g., black and white photos) and adjust the detail of the scan.

The flatbed scanner is optimized to scan drawings, photos and printed images, but it can scan any reasonably flat object that is put on the scanning plate. However, the flatbed scanner cannot enlarge images and retain the original image quality the way the film scanner can.

Start with the Best Possible Scanning Material

Film negative and slides contain much more image information and color depth than a photographic print. However, a photographic print is a better starting point than a picture cut from a magazine or newspaper. Try to start with the best possible materials for improved scanning results. Also, wipe the surface of your scanning material clean before putting it in the scanner. The platen (glass plate) of the flatbed scanner can also be wiped clean; ask a consultant at the Technology Services Desk on the second floor of Meyer Library for cleaning materials.

Bitmap Files

The image file created by the scanner is a bitmap image file. A bitmap image is made up of thousands of dots, called pixels, which are arranged in a pattern to make up your image. Each pixel contains information about its color and its location within the image. Each pixel can have a "bit depth" of one to thirty-two bits. The number of colors available per pixel is determined by the pixel's bit depth. A pixel with a bit depth of one holds two colors (white and black). A pixel with a bit depth of eight holds 256 colors. Both scanners support bit depths of up to approximately 24 bits. Therefore, they support images with over 16 million colors per pixel.

The Relationship between Scan Resolution and Image Size

Once you have scanned an image at a certain resolution, the image information you have in your computer will always have an inverse relationship between the image's resolution and its size. For example, if you decide to increase image size, you will lose resolution. Alternatively, if you increase resolution, you image will get smaller. The trick is to pick an initial scanning resolution so the resulting image will be big enough to meet your final publication needs, but not so big that it will waste disk space and processor time.

If you want to enlarge your image later, say twice the size of the original, select a scanning resolution that is twice the resolution of the output device. This technique, called oversampling, gives your image more detail and prevents your image from blurring or losing quality when it is enlarged. For example, if you have a 2" x 3" picture that you want to print out at 4" x 6" on a 600 dpi printer, scan the picture at 1200 dpi to get the maximum detail from your scanned image.

Managing Your Files

Most Multimedia Studio workstations have a designated space for patrons to store their work files. This partition is called "User Space." Patrons can temporarily store files created during a work session in this space. Because the Multimedia Studio workstations are public machines, please do not use the User Space partition for permanent file storage. At the end of your work session, be prepared to save your work to a Zip, Jaz or DVD-RAM disk, or to a remote server (such as your Web space on the Leland Systems' server or your i-drive at www.idrive.com). For more information about setting up your Web space on the Leland Systems, see "For More Information and Assistance" on page 16.

Operating the Scanners

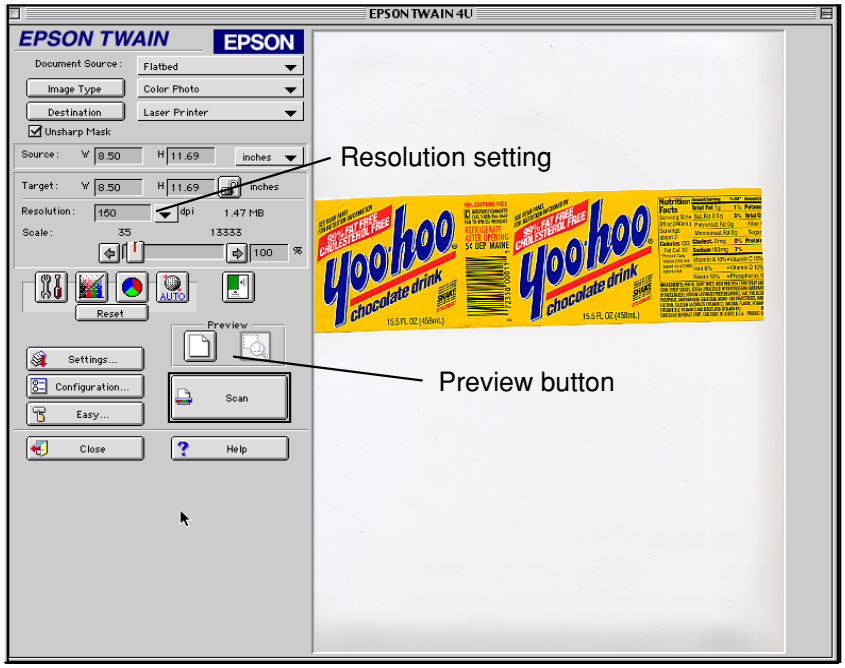
Before using the scanner, verify that it is on by checking its power light. If the scanner is not on, turn it on and restart your computer. If the scanner or computer that you are using is not working properly or if you need assistance turning a scanner on, ask a consultant at the Technology Services Desk on the second floor of Meyer Library for assistance.

Flatbed Scanning - Epson Perfection 1200U

Accessing the Epson TWAIN Scanner Interface

When using the Epson scanner, you will be using the Epson TWAIN scanner plug-in that is available in Adobe Photoshop. TWAIN stands for “technology without a interesting name” and is a cross-platform interface for acquiring images using certain scanners like the Epson Perfection 1200U. We recommend

Figure 1: Epson Twain Scanner Interface



that you use this Photoshop plug-in rather than another application because Photoshop is a superior environment for later adjusting your image. The steps below describe how to access the Epson TWAIN scanner interface in Adobe Photoshop:

1. Launch the Adobe Photoshop application by opening the computer’s hard drive in the upper right-hand corner on the desktop, then the Applications folder, and finally, the Adobe Photoshop folder. Double click on the Photoshop application icon.
2. If you have launched Photoshop successfully, skip to step 5. If you do not see the Photoshop icon in the Launcher, you can access the application using the Find File function. Go into the Apple menu on the desktop ( ) and select **Find File**. The Find File dialog box will appear.
3. In the field provided, type **`Adobe Photoshop`**, then click on **Find**. Find File will locate all items that contain Adobe Photoshop and list them in the Items Found box.
4. Locate the Adobe Photoshop application in the Items Found box and double click on it to launch the application.

5. Open the lid of the Epson scanner and place the image you want to scan face down on the glass scanning plate. In the upper right-hand corner of the scanning plate, you will see an arrow. Make sure that the top corner of your image is as near this arrow as possible. Line up the edges of your image with the top and right edges of the scanning plate.

Figure 2: Epson Twain Easy Mode

6. In Photoshop, click on the File menu and select **Import > TWAIN Acquire...** The Epson TWAIN scanner software interface will appear. This interface is shown in Figure 1 on page 3.

The Epson TWAIN scanner software interface is preset to scan color images at 150 dpi (dots per inch). This is the typical setting used for scanning color photographs and then displaying them on a monitor screen (usually via the Web).

Using the Epson TWAIN Scanner Software

Easy and Advanced Scanning Modes

The Epson TWAIN scanner interface is preset to come up in the advanced mode. (See Figure 1 on page 3.) However, you can also click the **Easy...** button to choose the easy mode (See Figure 2) Both the easy and advanced modes require you to select the Document Source, Image Type, and Destination for your image. Because there is only one available option for Document Source, you only have two variables to change in this mode. Click on the pull-down menus to set these two parameters.

Set the Image Type: Based on your original image, use these guidelines to choose the appropriate way in which it should be scanned:

- **Color Photo** is used for scanning color images and graphics.
- **Black and White Photo** is used for scanning grayscale images like black and white photos or for converting color images into grayscale.
- **Line Art** is the best choice if your image has no color or shades of gray (e.g., a cartoon illustration).

Set the Destination: Use this option to choose which way you hope to use your scanned image. Screen/Web is the setting best for monitor use. Alternatively, choose Laser Printer if you want to print this image later.

Note: The option choices indicated here are for the purposes of this document. Both Image Type and Destination have other options from which to choose.

Scan now or continue in advanced mode: If you are in the easy mode and are ready to scan your image; just click the **Scan** button. Your image will appear in a new Photoshop document. If you are in the advanced mode, at this point you can also choose to scan or you can adjust other parameters like image resolution or color.

While the easy mode is an expedient way to bypass the seemingly confusing advanced mode, it is recommended that you use the advanced mode to produce more consistent results. You can execute each task as effectively as in the easy mode without increasing the complexity of your project. If you are in the easy mode and wish to toggle back to the advanced mode, simply click on the **Advanced...** button.

Setting the Scan Resolution (Advanced Only)

The amount of detail and clarity in a scanned image is determined by the number of dots per inch (dpi) the scanner uses to reproduce an image. The number of dots per inch is called the "resolution" of your image. Scanning your image at a higher resolution may not necessarily produce better results because the printer or other output device (e.g., a monitor) may not be able to reproduce the selected resolution. For example, a Macintosh monitor can only display an image at a resolution of 72 dpi, even if the image was scanned at a higher resolution. An image scanned at a higher resolution will appear larger, not more clearly, on 72 dpi computer monitor. Using inordinately high resolution also takes up valuable disk space and compromises computer performance. Try to scan your images at the lowest resolution that will meet your needs.

Choose a Scan Resolution: Refer to the "The Relationship between Scan Resolution and Image Size" on page 2 for background information on choosing a scan resolution. When you selected an output device in the Destination field, you essentially chose a resolution based on the normal dpi for a destination type. However, in the advanced interface, you can tailor the way you want your image scanned in the Resolution pull-down menu. Choose a different resolution by clicking on the **Resolution** pull-down menu and selecting the desired resolution.

Previewing Your Scan

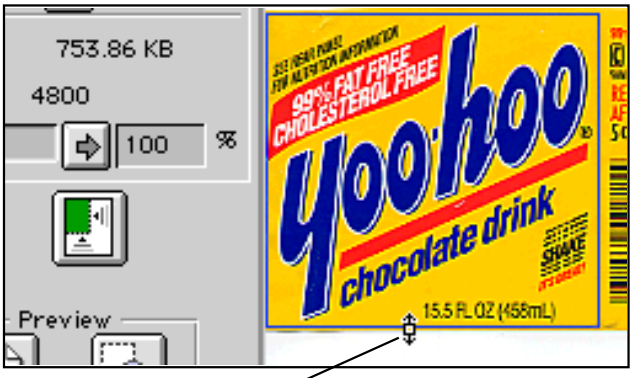
As soon as you choose **Import > TWAIN Acquire...** in Photoshop and you are in the advanced mode, the Epson TWAIN software will preview (or prescan) your image. Alternatively, you can click on the Preview button in the advanced interface. (See Figure 1 on page 3.) and the scanner creates a preliminary image that appears in the preview area of the interface. The scanner uses the settings you have entered or the default settings to create the preview of your image. In this way, you can see how your image will be affected by the settings you chose before you make a final scan. It is important to preview your image and choose your settings before scanning to assure the highest quality scan.

Cropping Your Image

Cropping your image before you scan it can significantly reduce the file size of your digitized image. If you want to crop out part of your image, you can do so after you preview your image, before executing your final scan. Once you have a preview of the image, your image appears in the preview area of the interface (See Figure 3.). Until you crop it, the entire image will appear in your final scan. To designate the area you want to keep, follow these steps.

1. Click on the crop button () and you will see the software's best guess as to what portion of the image you want to scan by the box around the image. Use the mouse to adjust the size of the box by placing the crosshairs (+) on the edge of the box. You will notice the crosshairs change to an adjustment tool. Click and drag the edges of the box to resize the image. (See Figure 3 to the right.)

Figure 3: Cropping Your Image



Click and drag box edges with adjustment tool to select the area you want to scan.

2. Once you have adjusted the selection box, you can reposition it by clicking inside the box, then dragging the box with the hand tool. You can also use the arrow keys to move the box around in the same way.
3. Only the selected area will be scanned.

You can also scan the entire image, then crop out unwanted areas in Photoshop after executing the final scan. See “Working with Your Scanned Image in Adobe Photoshop ” on page 12 for more information.

Scanning Your Image

Once you have entered your settings, previewed your image, and designated the cropping area in the Epson TWAIN Scanner interface, you are ready to scan your image. To execute the final scan, click on the Scan button in the lower right-hand side of the interface. (See Figure 1 on page 3.) The Epson Scanner will scan the selected area of your image. After you scan your image, it will open in a new, untitled window in Photoshop. For information about working with your image in Photoshop, see “Working with Your Scanned Image in Adobe Photoshop” on page 12.

Note: To scan multiple images on the flatbed scanner, place all the images you want to scan on the scanning plate, perform a scan, then separate the images later, using Adobe Photoshop.

Epson TWAIN Scanner Software Limitations

You can make a variety of changes to your image before scanning it, but be aware that the Epson TWAIN Scanner software has limitations. The Epson TWAIN scanner interface lets you alter the tone and threshold of your image, but we recommend that you make these alterations in Photoshop after you scan. The scanner software uses information taken from the preview of the image (not the actual scan) to make these alterations. As a result, the image corrections you make in the Epson TWAIN interface may be inaccurate. You can correct your image’s color and tones in Photoshop after executing the final scan.

Film/Slide Scanning - Kodak Professional RFS 3600 Film Scanner

Accessing the Kodak Scan Interface

When using the Kodak film scanner, you can acquire an image (from a film strip or a slide) using the Kodak scanner plug-in that is available through Adobe Photoshop. The steps below describe how to access the Kodak Scanner plug-in in Adobe Photoshop:

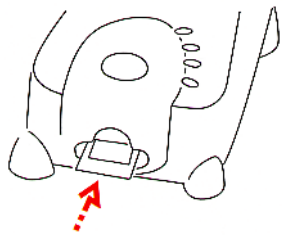
1. Launch the Adobe Photoshop application by clicking on its icon in the Launcher, which appears on the desktop.
2. If you see the Photoshop icon in the Launcher, skip to step 5. If you do not see the Photoshop icon in the Launcher, you can access the application using the Find File function. Go into the Apple menu on the desktop ( ) and select **Find File**. The Find File dialog box will appear.
3. In the field provided, type **`Adobe Photoshop`**, then click on **Find**. Find File will locate all items that contain Adobe Photoshop and list them in the Items Found box.

4. Locate the Adobe Photoshop application in the Items Found box. Double click on it to launch the application.
5. After launching Photoshop, click on the File menu and select **Import > Kodak RFS 3600...**. The Kodak Scan interface will appear. This interface is shown in Figure 6 on page 8.
6. Load your film or slides into the Kodak scanner using the steps detailed in the following section.

Loading Film and Slides into the Kodak Scanner

This section describes how to load film or slides into the Kodak scanner.

Figure 4: Insert Slide



If you are scanning mounted slides:

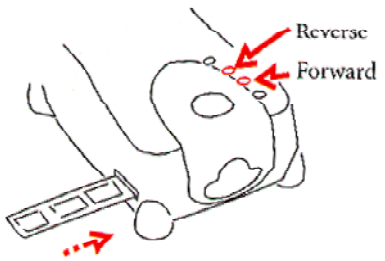
Use clean single mounted 35 mm slides. Eject filmstrip before loading a slide.

1. Hold the slide mount with thumb and forefinger, with the image facing you normally.
2. Push the slide gently and completely into the scanner as shown in Figure 4.
3. To remove, pull the slide from the scanner with your thumb and forefinger. (The Eject button does not function with slides.)

If you are scanning film:

Use 35 mm filmstrips 3-36 frames long. Use color negatives, color reversals (slide film), or black and white negative film. **Note**: Do not use spliced film.

Figure 5: Scanning Film



1. Clean the filmstrip, and cut off numbered labels at film ends.
2. With the highest frame number entering first and edge data at the top, feed the filmstrip gently into the left side of the scanner until the film is pulled, as shown in Figure 5.
3. Look through the top of the scanner and reposition the film with the scanner buttons:

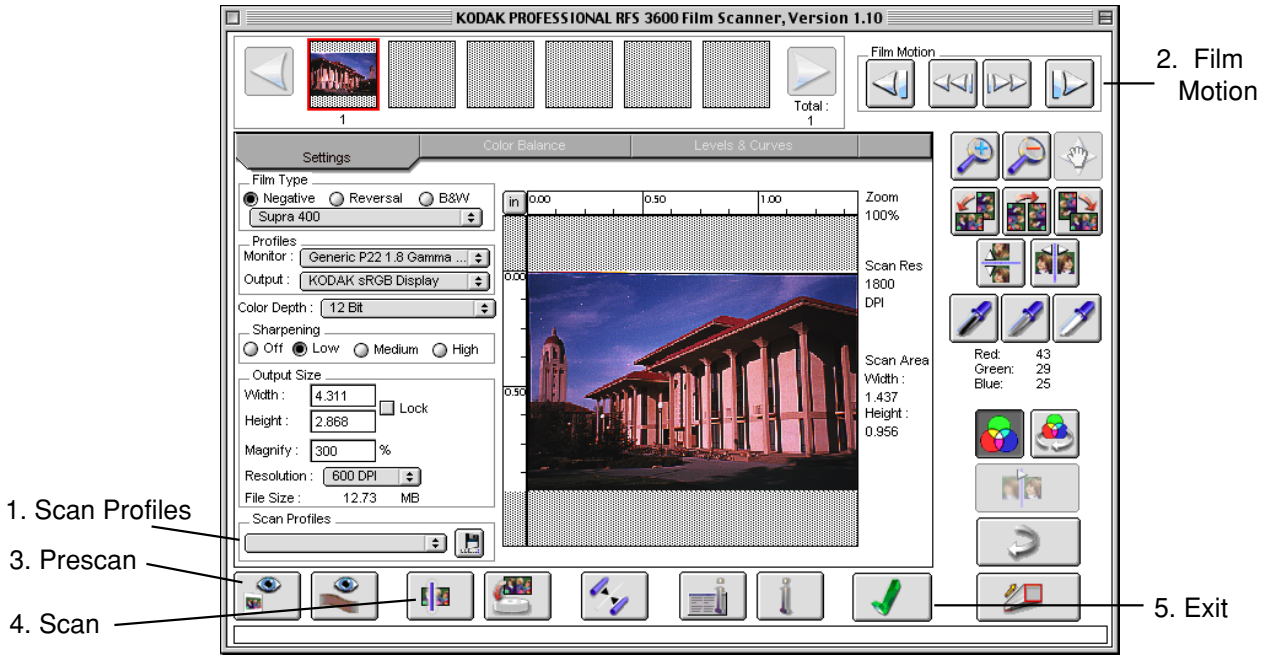
   A. Tap **Reverse** to move film left in fine increments; or hold **Reverse** down to move left one full frame.

   B. Tap **Forward** to move film right in fine increments; or hold **Forward** down to move right one full frame.

Performing a Basic Film Scan

The Kodak Scan interface allows you to save, change, and delete the settings you use during a scanning session. To select these settings options, click on the **Settings** tab in the Kodak Scan interface, which includes three tabs surrounded by general controls. (See Figure 6 on page 8) Select the desired settings option from the list at the left side of the menu. The following options are used in basic scanner operation using film. (For slides, see "Advanced" section on page 9.)

Figure 6: Kodak Scan Interface



1. **Scan Profiles**: Choose a generic film type and that is close to the your film type (e.g., ASA 400) and output size (e.g., 8" x 10").

2. **Film Motion**: Press **Reverse** or **Forward** to move to the picture (or the first of a series of pictures) you want to scan. Press **Reverse Eject** or **Forward Eject** (or Eject button on the top of the scanner) to remove filmstrip.

3. **Prescan:** You can choose to prescan a single image (the current image in the scanner) or multiple images.

   - To prescan a single image, first click Reverse or Forward to move filmstrip to the frame to be scanned. Then, click on Prescan Frame button (right). Center the image by tapping Reverse or Forward on top of the scanner; click Prescan Frame again after adjustments.

   - To prescan multiple images, click on Prescan Strip (right), which will prescan the remainder of the filmstrip. Click the arrows to scroll thumbnails and click the thumbnail of the image to be scanned to view the thumbnails.

4. **Scan:** After making the adjustments, such as DPI, image size, auto contrast, etc., you can use the **Scan** button (second from right) to complete the scan. After scanning, the scanned image will be sent to Photoshop. If you want to scan the picture directly onto hard disk, you can use **Scan to File** button (right).

5. **Exit**: Click on **Exit** to quit the software at any time.

Performing a More Advanced Film Scan

You can further specify how the scanner should interpret the information in your image by selecting a color mode (Negative, Reverasal, or B&W) and film type from the side menu below the Settings tab in the Kodak Scan interface. (See Figure 6 on page 8.) This menu allows you to select, among other things, film type, monitor and output profiles, and color depth. The following steps and guidelines cover how to set some of these parameters for the image you are scanning.

Further Use of the Settings Tab

Film Type Selection: Under the Film Type selection box, use the radio buttons to select **Negative**, **Reversal** (slide film), or **B&W.** Then choose one of the following film types from the configuring menu. To do so, click on the menu. While holding the mouse down, select one of the film types from the configuring menu that appears (for example, Supra 400).

Profiles: Under the profiles menu, select your monitor; if it's not listed, chose **Generic Monitor**. Then, select your output device; if it's not listed, choose **KODAK sRGB Display**.

Color Depth: You can set Color Depth to **8 Bit** or **12Bit** per channel. The scanner will perform the scan at **12 Bit** without regard to the setting. However, if **8 Bit** is selected, only 8 bits of data per pixel are transferred. Setting the **Color Depth** option to **8 bit** will increase speed, but lessen the overall quality of the images scanned.

Sharpening: While you can adjust the level of edge definition between pixels to Off, Low, Medium, or High, it is recommend that you use the Photoshop sharpening filter described on page 15 of this document.

Output Size: Because of the confusing and inconsistent nature of these controls, we recommend that you choose one of the **Scan Profiles** with a resolution that closest meets your needs, scan your image and reduce (if need be) the image size in Photoshop. If you need to put in parameters that the profiles do not accommodate, you can find more information by clicking on the information button ("`i`") at the bottom of the Kodac Scan Interface to access the Kodak documentation. A detailed explanation of Output Size can be found on page 66 of that documentation.

Preview Your Scan

When you click on the Prescan button in the bottom left-hand corner of the Kodak Scan interface, the scanner creates a preliminary image that appears in the center area of the interface. The scanner uses the settings to create this preview. In this way, you can see how your image will be affected by the settings you have entered before you execute your final scan.

Using the Scanner's Other Controls

After prescanning your film image, you can use the scanner's other controls to make further adjustments to the prescaned image in the center area. However, it is suggested that you use Photoshop for these operations.

1. The **Rotate Image** buttons rotates the image 90 degrees counterclockwise, 180 degrees, and 90 degrees clockwise.

2. The **Flip Image** buttons flips the image vertically or horizontally.

3. Click on the **Zoom** button and click the image to zoom in or out. To turn off zoom, click on the **Zoom** button again. Use the **Move** button (to the right of the zoom buttons) to drag and move around the zoomed image.

4. Click Undo to undo the last function performed.

5. Click Image Window to open a resizable window on which you can alter and view your adjustments.

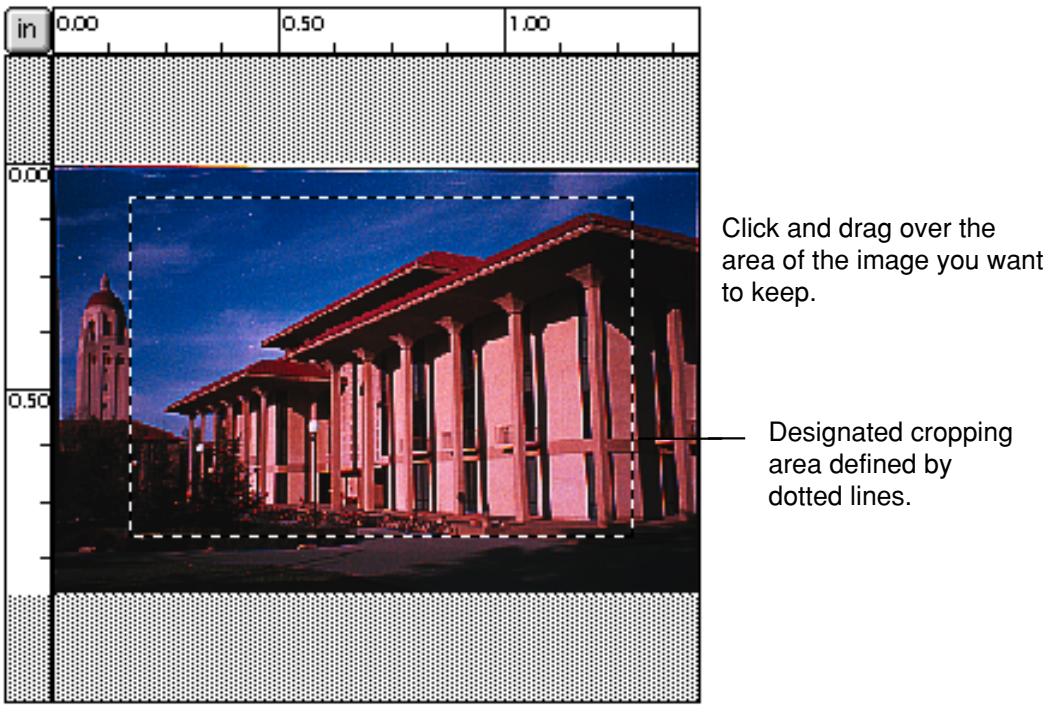
Cropping Your Image

Cropping your image before scanning it can significantly reduce the file size of your scanned image. After previewing your scan, you can crop your image in the preview area of the Kodak Scan interface by selecting the area of your image that you want to keep. The following steps describe how to do so.

1. Click in the upper left-hand corner of your image.
2. While holding the mouse down, drag it to the lower right-hand corner of your image. A dotted selection border will appear around the part of your image you have selected. This border, the crop box, designates the area of the image that you want to keep. (See Figure 7 below.)
3. Once you have drawn a selection border, you can reposition it by clicking inside the crop box, then dragging it to the new position in your image.
4. If you want to change the size of the crop box, click on a side or corner of the selection border and drag until the selection border is the desired size.
5. To remove the crop box, click outside of the crop box on the preview image.

You can also scan the entire image, then crop out unwanted areas in Photoshop after executing the final scan. See “Working with Your Scanned Image in Adobe Photoshop” on page 12 for more information.

Figure 7: Cropping Your Image



Setting the Scan Resolution

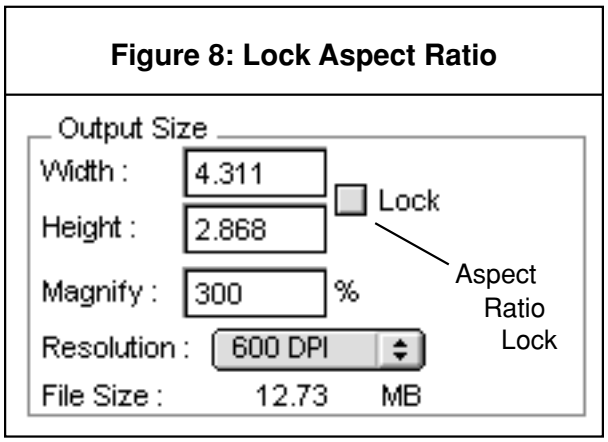
Before scanning your image, you should set your image's scan resolution. For more information about determining a scan resolution for your image, see "The Relationship between Scan Resolution and Image Size" on page 2. To set the resolution of your image in the Kodak Scan interface, highlight the value in the Output Resolution field and type in the desired resolution. (See Figure 6 on page 8.)

Locking Your Image's Aspect Ratio

If you want to change your image's width or height values, lock the image's aspect ratio in the Kodak Scan interface before doing so to prevent distorting your image's proportions. Locking the aspect ratio locks the proportions of the cropping area. If you change one of the dimensions (e.g., width or height), the other dimension will be automatically calculated and changed to maintain the proportions of the cropping area.

To lock the aspect ratio, click on the **Lock** checkbox to the right of the Width and Height fields in the scanner interface.

Figure 8: Lock Aspect Ratio



Saving Your Custom Settings

After finalizing your scan settings, you can save them by using the () button to the right of Scan Profiles in the Kodak Scan interface.

Scanning Your Image

Once you have entered your settings according to the guidelines in the previous sections, previewed your image, and designated the cropping area, you are ready to scan your image. To execute the final scan, click on the **Scan** button in the lower left-hand corner of the Kodak Scan interface. The scanner will scan the selected area of your image and make any enlargements or reductions to its size. After you scan your image, it appears in a new, untitled file in Photoshop. For information about working with your image in Photoshop, see "Working with Your Scanned Image in Adobe Photoshop" on page 12.

Kodak Professional RFS 3600 Film Scanner Scanning Software Limitations

You can use the Kodak Scanner interface to alter the brightness/contrast, tones, and variations of your image. However, it is recommended that you make these alterations in Adobe Photoshop instead. The Kodak scanner software uses information taken from the preview of the image (not on the actual scan) to make these alterations. As a result, the image corrections you make in the Kodak Scan interface may be inaccurate.

Working with Your Scanned Image in Adobe Photoshop

Once you have scanned your image, it automatically opens as a new, untitled file in Photoshop. This section describes how to make some final corrections to your image using Photoshop and how to save your image in the appropriate file format. For more information about using Photoshop and about image file formats, see “For More Information and Assistance” on page 16.

Initial Saving of Your Image

It is recommended that you initially save your scanned image in the native Photoshop format in the User Space on the Desktop. To ensure that you have a high-quality version of your image while you are editing, continue to work off this original before converting it to another format.

1. Click on the File menu and select **Save** from the choices listed.
2. In the dialog box that appears, click on the button marked Desktop. In the location window, select the User Space disk by clicking on it, then click **Open**.
4. In the **Save this document as...** box, type a name for your image file that will be easy to remember and distinguish it from other files.
5. Click on **Save** to save your image file.

While you edit your image it is always a good idea to select **File > Save** to make sure you are retaining your work.

Straightening Your Image.

Sometimes your scanned image will be crooked because of the way it was placed on the scanner or because the camera was slightly tilted. Use the Measure tool (to measure angle) combined with the Rotate Canvas function to straighten your image.

1. Click on the **Measure Tool** in the Toolbox to select it. It looks like this: 
2. Move the measure tool to a line in your image which should be straight vertical or horizontal. (The edge of the scanned image often suits this purpose.)
3. Click and drag to another point further along that line.
4. Choose **Rotate Canvas > Arbitrary...** from the Image menu.
5. Depending on which angle the measure tool line was, select CW (clockwise) or CCW (counter clockwise) and then click OK.
6. If you chose the wrong rotation direction, choose File > Undo and then repeat steps 4 and 5 using the opposite direction.

Cropping Your Image

To crop your image in Photoshop, follow the steps listed below.

1. Click on the **Rectangular Marquee** icon in the Toolbox to select it. The rectangular marquee is located in the top left-hand corner of the Toolbox. It looks like this: 
2. You may not be able to see the rectangular marquee because it is hidden behind another marquee

tool. If you cannot see the rectangular marquee, click, while holding the mouse button down, on the icon in the upper left-hand corner of the Toolbox. A pop-up menu will appear. While still holding the mouse down, select the rectangular marquee tool from the tool icons shown.

3. When you move the mouse over your image, your cursor turns into a crosshair. Click at one corner of the area you wish to retain and drag to the opposite corner, forming a box around the area of your image that you want to keep. If you find that the crop area is not large enough, click the crosshairs outside the current selection and drag until the portion of the image that you want to keep is entirely within the selection border.
4. Once you have created a selection border, you can reposition it by moving the cursor so that it is inside the frame, then clicking and dragging the frame to the desired position.
5. When you are ready to crop the image, click on the File menu and select **Crop**. You can undo the crop by selecting **Undo Crop** from the Edit menu.

Adjusting the Tonal Qualities of Your Image

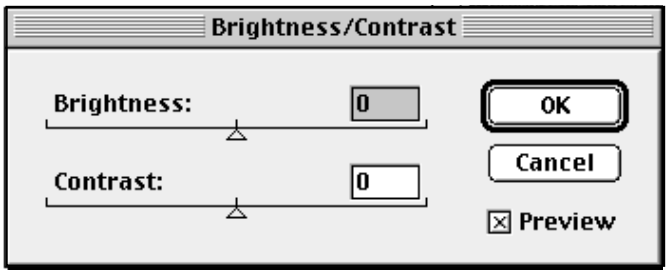
Use the Auto Levels and Brightness/Contrast options to adjust the tonal qualities of your image. The lightest tonal areas (white point) and darkest tonal areas (shadow point) are usually underrepresented within your image. Auto Levels automatically finds the average lightest tone and darkest tone within your image and removes underrepresented extreme dark areas and light areas.

The Brightness/Contrast allows you to visually adjust two other tonal qualities. Increase or decrease brightness to make all areas of your image generally brighter or darker. Increase or decrease contrast to change the difference between dark and light areas in your image. More contrast make your image more black and white, while less contrast makes your image more of a mix of grays.

Follow these steps to make changes to the tonal qualities of your image.

1. Select **Adjust > Auto Levels** from the Image menu.
2. Return to the Image menu and select **Adjust > Brightness/Contrast**. The Brightness/Contrast dialog box will appear, as shown in Figure 9 below.
3. Click on the Preview box to select it. This option allows you to preview your image as you make changes to the brightness and contrast levels.
4. Click and drag the Brightness and Contrast sliders to the right or left of the midpoint. You will see the image's brightness and contrast levels change as you do so.
5. When you are satisfied with your image's appearance, click on **OK** in the Brightness/Contrast dialog box to execute your changes.

Figure 9: Brightness/Contrast Dialog Box

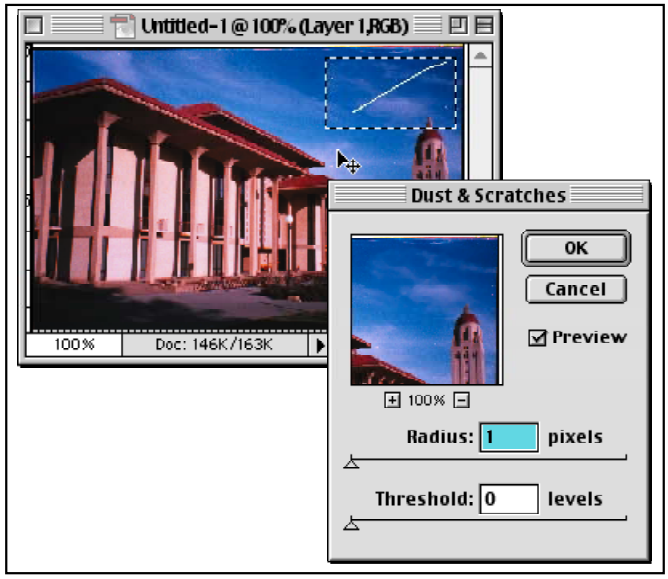


Remove Dust and Scratches

Though you may have cleaned the original material you scanned, there may have been bits of dust or scratches that are now visible in your image. Use the Dust and Scratches filter to automatically remove image anomalies from your image. The Dust and Scratches filter works best on soft areas like clouds, but tends to blur sharper areas. For this reason, you must select a portion rather than the entire image to change.

1. Click on the **Rectangular Marquee** icon in the Toolbox to select it. The rectangular marquee is located in the top left-hand corner of the Toolbox. It looks like this: 
2. Use the marquee to select the area with dust or scratches by clicking and dragging a box around the area you want to edit.
3. Select **Noise > Dust and Scratches...** under the Filter menu.
4. Click on the **Preview box** to select it. This option allows you to preview your image as you make changes with the filter.
5. Adjust the **Threshold** (how different the pixels' values should be before they are eliminated) and **Radius** (how far the filter searches for differences among pixels) to set parameters in such a way that unwanted marks are removed but the image is not blurred too much. See Figure 10 for an example of this filter being adjusted.
6. Click **OK** to make these changes to your image. You can always select **Edit > Undo** if you are unsatisfied with the changes after you have run the filter.

Figure 10: Dust and Scratches Filter



Final Touches: Despeckle and Sharpen Your Image

You may want to make two final adjustments before saving your image by running the Despeckle and Unsharp Mask filters on your image. Despeckle can be useful to remove unwanted artifacts such as moiré patterns that may be in your image if the original scanned material was a halftone image from a magazine or newspaper. To despeckle select **Noise > Despeckle** under the Filter menu. You may also want to sharpen your image by selecting **Filter > Sharpen > Unsharp Mask...**. Adjust this filter's parameters in the same way you adjusted the Dust and Scratches filter above.

Choosing a File Format for Your Edited Image

Photoshop allows you to save your image in a variety of file formats. The file format you choose should be determined by where you are in your image editing process and how much disk space you have available to you.

When deciding on a file format, you can save it into either a “lossless” or a “lossy” file format. Lossless formats do not alter or remove information from your image during the saving process. Lossless file formats include PICT, TIFF, and Photoshop’s native file format (PSD). If you intend to keep editing your image and you have the disk space, it is recommended that you save your image in one of these lossless formats.

Lossy file formats take up less disk space because they compress the information in image file. While lossy formats enjoy the benefit of smaller file size, clarity and color information can be lost during the conversion process. Lossy file formats include, among others, JPEG and GIF, the two most widely used formats for Web graphics. For more information about saving your file in a lossy format, please refer to the “Selecting a File Format” in the Academic Computing’s *Using Adobe Photoshop 5.5* document at http://acomp.stanford.edu/acpubs/Docs/ps55tutorial/.

When you have made all necessary changes and corrections to your image, you can save it in the Photoshop format as described in “Initial Saving of Your Image” on page 12 or you can save it in another format. The following steps describe how to save your image in another format using the Save As command.

1. Click on the File menu and select **Save As...** from the choices listed.
2. Insert your portable media (e.g. Zip, DVD-RAM disk) into the appropriate drive or login to a remote server via the Chooser or MacLeland.
3. In the dialog box that appears, click on the button marked Desktop. In the location window, select disk or remote server from your desktop by clicking on it. Click on **Open**.
4. In the **Save this document as...** box, type a name for your image file and select a file format from the Format box. (See “Choosing a File Format” above for more information.) Be sure that you add the appropriate file extension to the end of your file name (i.e., “filename.**jpg**”).
5. Click on **Save** to save your image file.

For a more detailed explanation of file formats, see the *Graphic File Formats at a Glance* document in the document racks on the second floor of Meyer Library and on the Web at http://acomp.stanford.edu /acpubs/Docs/graphic_file_formats/.

For More Information and Assistance

The publications listed below provide additional information about the topics covered in this handout.

The following documents are located in the racks on the second floor of Meyer Library and on the Web at http://acomp.stanford.edu/acpubs/:

Using Adobe Photoshop 5.5 —A Tutorial

Adobe Photoshop Reference Guide

Graphic File Formats at a Glance

Manipulating Your Images—Before and After Scanning

Setting Up Your Web Space on a Macintosh

Setting Up Your Web Space on a Windows Computer

The user manuals listed below can be checked out at the Technology Services Desk on the second floor of Meyer Library.

Photoshop User's Manual

Epson Perfection 1200U manual

Classroom in a Book: Photoshop

Kodak Professional RFS 3600 Film Scanner Manual (To get this manual, click on the "`i`" button on the bottom of the Kodak Scan interface.)

For more information on idrive, a Stanford internet hard drive service, please see its web page: http://idrive.stanford.edu

You can also ask a consultant for assistance at the Technology Services Desk on the second floor of Meyer Library or send email to consult@acomp.stanford.edu.