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INTRODUCTION

This document is a basic, nuts-and-bolts guide to creating graphics for CALI lessons. While it emphasizes images of legal research materials like those used in the author's two CALI lessons, it is equally relevant to using graphics in other CALI subject lessons as well as in other applications (for example, creating graphics for Powerpoint and other slide show software).

This guide focuses on Adobe Photoshop, but mentions how some of the techniques can also be performed on software such as Corel Draw, Photoshop Elements 2.0 (see the Appendix on the last page for more software information).

This document, and any updates or changes, is available at

<http://www.loyno.edu/~bhuddle/CALI/>

Additional tips and techniques will be posted on this page as they are written.

“Target” size for Graphics in Different Applications

Recent statistics show that around 37 - 39% of computers use a screen resolution of 800 x 600 and 50% use a resolution of 1024 x 786 or higher. Considering typical academic lab replacement schedules, a higher percentage of law school lab computers may have the higher resolutions, but there is probably still a good percentage of lab and, more importantly, student, computers with as 800 x 600 screen resolution.

At an 800 x 600 resolution, the CALI screen allows a maximum “working space” for a graphic of about 430 pixels in height and 600 in width, if you want to take up the entire CALI screen. If you want to leave half the screen available for text (which gives you about three paragraphs worth of text without requiring readers to scroll down), a graphic of 430 high by 300 wide is an ideal target.



These sizes were determined through trial and error and are not any “official” CALI guidelines. The CALI software will resize any larger graphics so that they fit, but that may cause the image to be distorted once it is resized. If the image contains text, the text may not be as readable. Also, this creates a “blink” effect when these images are loaded.

At a screen resolution of 1024x768, you can use larger graphics without requiring the CALI software to resize them as they load. The ideal maximum size for whole screen and half screen images in CALI at that display resolution are shown here:



Note that if you are preparing graphics for a slide show, the maximum ideal size of your graphics is equal to the resolution of the computer screen on which you will be displaying your show. I.e., on an 800x600 screen resolution, that is the biggest image you can show without the image being automatically resized to fit. So to make your images the clearest they can be, use that as a target size.

Graphics in CALI that are optimized for a screen resolution of 800x600 will display fine on larger screen resolutions: the image will merely take up a smaller portion of the total CALI screen. The reverse, however - images optimized for 1024x768 - will result in images being resized by the CALI software when displayed on 800x600 screens and thus may result in some distortion.

So which screen resolution should be used when optimizing graphics size for CALI? Its really still a judgement call, but in the near future we can be safe in presuming that a screen resolution of 1024x768 (or larger) will be what most CALI users have. It may be useful to note in the introductions of any graphics-heavy lesson that it is best viewed at this resolution.

GRAPHICS WORK FLOW

There are three major steps in the “workflow” for creating graphics, whether they will be used in a CALI exercise or for any other application. The chart below shows these three steps, the actions typically conducted in those steps, and the graphics format most commonly used during those steps.

Graphics Work Flow

Steps	Actions	Graphics Formats Used
Image Acquisition	Obtain images from <ul style="list-style-type: none">- scanned materials- digital camera- screen capture- clip art collections- graphics found on the web Draw original graphics	*.JPG *.GIF *.TIF
Image Manipulation	Resize Crop Combine image elements Highlight/Underline/Emphasize, etc. Other misc. manipulations	*.PSD (Photoshop) *.PSP (Paint Shop Pro)
Image Exportation	Merge layers Convert Save As JPG/Export to GIF	*.JPG *.GIF

Step 1: Image Acquisition

When acquiring images, whether by scanning, digital photography, or screen capture, you generally want to acquire as large an image as you reasonably can. All the software available to work with graphics have the ability to resize the graphics as you work with them, but it’s a good idea to have an original graphic of a fairly large resolution. For example, the common three megapixel digital cameras will give you an image of around 2000x1500 or so. This is several times the optimal image size described earlier, but resizing it down to the target resolution will result it a good quality, usable image. But it will be useful to save the original, large size image in case you want to change or redo the graphic later.

Scanning

Scanning directly from some books can be difficult. If it's a heavy volume, it can be tricky to hold it in place on the scanner. To scan some images from books, it may be useful to make a good quality copy of the pages first, and then scan those. (Current late-model copiers can make copies virtually identical to the original page.)

The features included in the software that come with different scanners varies, but they should all have the same handful of core settings that can be changed (some scanner software have both an automatic and an "advanced", "expert", or "professional" mode: certain of these settings can only be adjusted while in these modes). Black and white text can be effectively scanned in, yes, black and white or greyscale mode (this will help save file space by making the resulting files smaller than if you scanned black and white text using color mode). A high DPI - Dots Per Inch - setting will result in an image that can be more usefully manipulated in many ways, compared to an image with a lower DPI. A setting of 300 DPI is great for this purpose (for the same reason, make sure the scanner is set so that the resulting image is 100% of the original). These settings will result in a very large image - both in image resolution (2400x1500 for a typical book page) and in file size (the amount of memory taken up by the image on your hard drive), but again the final image used in CALI and in most other applications will be much smaller.

If available, save the scanned image as an *.TIF file. A TIF file (actually called a "TIFF", or "Tagged-Image File Format") is an uncompressed image format (*.JPG, or "JPEG" - "Joint Photographic Experts Group", - and GIFs - "Graphics Interchange Format" are compressed files, which is why they are so commonly used on web pages and in many other applications). TIFs can be very large files because of that, but it enables you to resize the image without much noticeable distortion. Just as most image software has the ability to resize images, they also have the ability to export TIFs to JPGs and GIFs.

Screen Captures

Windows has a built-in screen capture tool: the Print Screen key on the keyboard. Pressing this key (sometimes it is shared with another key and you have to use the Shift key to access it) captures the entire screen and places an image of it in the memory of the Windows Clipboard. Then you can paste it into whatever application you want, whether a graphics program such as Photoshop or even a word processor. (You can also use ALT-Print Screen to capture only the active window on the screen). the Apple operating systems have their own set of built-in screen capture tools.

Screen captures allow you display sample pages of a web site, examples of software applications, and anything else viewable on a computer screen, as part of a slide show or an instructional program like CALI. It also provides a useful shortcut to "convert" proprietary graphics and documents into more useful formats. For example, pages from a PDF document are

not readily convertible into other formats using most graphics software. But any document you can retrieve in PDF, like recent case law available in PDF from Westlaw, or the CFR and Federal Register from GPOAccess, *can* be “converted” by using Windows’ Print Screen function to capture a page of a PDF file and then copy it into whatever image-editing software you are using. This, of course, saves you the effort of scanning any of the primary materials you can obtain in PDF format.

A useful tool in managing images in the Windows clipboard that you capture using the print screen command is the Clipboard Viewer. You can open the Clipboard Viewer with Windows (the Start button) + Run, then type “clipbrd” (no quotes) in the blank Open field (the executable is “clipbrd.exe”). This utility shows you what has been captured into the Windows clipboard. If you are capturing numerous screens in a row, the Clipboard Viewer can be useful to manage what is currently in the clipboard memory. Some programs, like Photoshop, can be a little dicey when pasting in numerous screen captures in succession. Photoshop has a Purge Clipboard command, but sometimes it doesn’t work probably and subsequent screen captures aren’t available to it. The Clipboard Viewer lets you delete items in the clipboard memory before capturing another screen, assuring that the next paste command will paste in the image you want.

Digital Photography

Digital cameras of good quality have become fairly inexpensive in the past few years. Snapshots of the cover of a book or of parts of a full set make good examples in CALI lessons on legal research, as well as in other lessons and other applications. Most digital cameras save their images as high-quality *.JPG files of a large resolution. Manipulating and working with such images can be done in the same manner as working with other images, as described in this guide.

Clip Art and Graphics from the Web

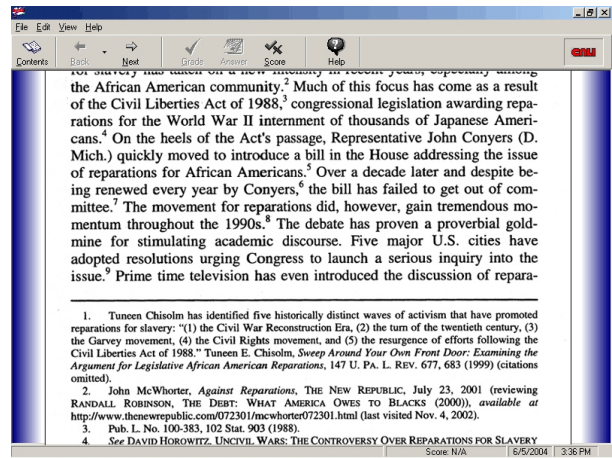
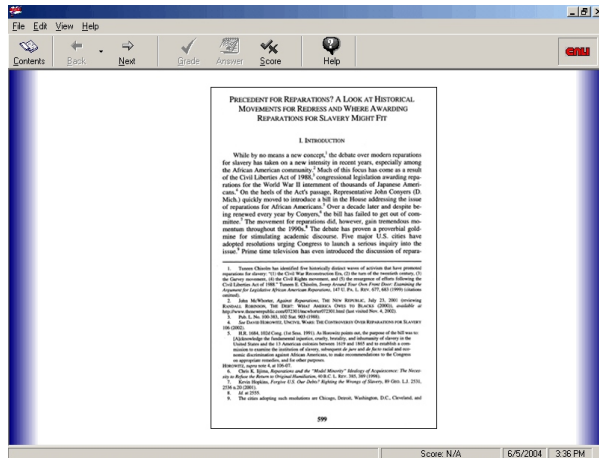
The images in some Clip Art collections can be varied in size and resolution with no noticeable loss in quality. Some of these images are in proprietary formats that can’t easily be converted (for example, the *.WPG files that are the Clip Art that comes with WordPerfect). But, just like the Windows print screen function enabled you to “convert” a page from a PDF document into a usable graphics file, if you can create a graphic in WordPerfect or any other software using their proprietary image format, you can use print screen to capture and paste the image into a graphics program like Photoshop or Paint Shop Pro.

Many images found on the web are usually of a size and quality best suited for on-line viewing and cannot easily be re-sized or manipulated in any useful way. Also, realize that many images on the web are under copyright and can only be used with the owner’s permission. Many Clip Art collections have a more broad licensing agreement that lets you use the graphics therein in a wide variety of situations.

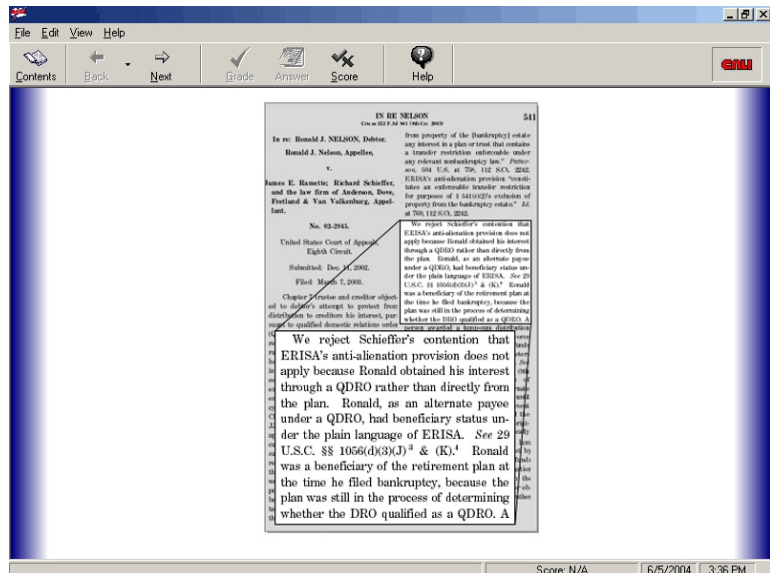
Step 2: Image Manipulation

However you acquire the image, the next step is to manipulate and work with the image to suit the purpose you want the image to serve. On some occasions, you might need little or no manipulation to create the image you want to use. But other times, the image will need some work. Particularly when using scanned images of pages from books, the images will need to be manipulated.

An image of a full page of text displayed on a screen so that the whole page is shown won't be readable (see the left-side image below), and an image of text that is readable won't be able to show the whole page (see the right-side image below).



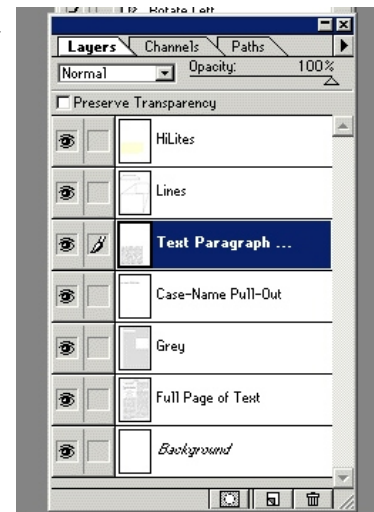
A compromise is to create a graphic such as the one shown at the right. It is low quality yet readable JPG of a single page from *In Re Nelson*, 322 F.3d 541 (8th Cir. 2003), that is 430 pixels high and just over 300 pixels wide. It would easily fit onto half of a CALI screen at a 800 x 600 monitor resolution, leaving half the screen for explanatory text. In this image, text on the full page would not be easily read, but the “pull out” text focusing on part of the opinion CAN be read. (Realize that this image at the right is a small image of a screen capture: on a computer, it is much more easily read than it is on this page.)



Layers

The key to making the “pull-out” part of the text (as well as the other elements) in the above example, are layers. Layers work just like transparencies on an old overhead projector, and are available in most graphics programs (including Photoshop, Paint Shop Pro, and CorelDraw). You can have multiple layers, with each layer containing a different part of what will become the final image: if the elements of the graphic on one layer don't take up the whole image, the rest of the layer will be transparent and elements on the layers below will show through. You can also set the opacity of both the painting and drawing tools as well of the layers, so that the graphic elements on a layer are semi-transparent.

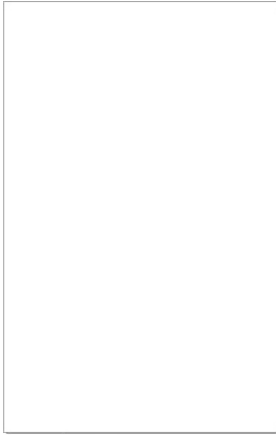
The layers of an image can be selected and manipulated in a number of ways. At the right is the Layers Tab from Photoshop for an image that has seven layers. The current, active layer is the layer that is highlighted; in this case, the layer “Text Paragraph” is the active layer. The active layer is the layer which any drawing or painting tools will affect, as is indicated by the paintbrush icon. Also, note the eyeball icons for each layer: this indicates that the layer is visible. These icons can be clicked to temporarily hide a layer if you want to make only one or a few of the layers visible in order to work on them more easily.



When you cut and paste (or copy and paste) elements of different graphics onto one another, Photoshop automatically adds the new elements onto their own layers. Also, when you use the Text tool, the Text is added on their own layers. Photoshop images with multiple layers can ONLY be saved as the proprietary Photoshop format, i.e., filename.PSD. Paint Shop Pro files, when they have multiple layers, similarly can only be saved as proprietary *.PSP files. So while creating and working with images, these proprietary images are essentially works in progress. When finished, they can be converted, with the layers combined, and saved as *.JPG files (or other common “end product” formats). BUT it is a *very good* idea to keep the original *.PSD file as it is, multiple layers and all, in case you want to come back to work on it.

One of the BIG benefits of using layers is that, just like different plastic transparencies overlaid on each other, you can work with one layer without affecting the other layers. If I draw the highlighting directly on the text of a page, but later decide I want something else on that page highlighted instead, I would be stuck and have to start over again with the original image. But with a highlight on a separate layer, it can be changed without changing the text it is highlighting.

To demonstrate this concept better, here are the different layers from the image of In Re Nelson shown earlier:



Border (Template) Layer

IN RE NELSON
Case No. 03-10010

In re: Ronald J. NELSON, Debtor.
Ronald J. Nelson, Appellee,
vs.
James E. Rameritz, Richard Schieffler,
and the law firm of Anderson, Rose,
Forsland & Van Valkenburg, Appel-
lant.

No. 03-2043
United States Court of Appeals,
Eighth Circuit.
Submitted: Dec. 11, 2003.
Filed: March 7, 2004.

Chapter 7 trustee and creditor object-
ed to debtor's attempt to protect from
distribution to creditors his interest, par-
tially to qualified domestic relations trust
QDRS, in his ex-wife's ERISA-qualified
retirement plan. The United States Bank-
ruptcy Court for the District of Missouri
held that debtor's interest in plan was
included in "property of the estate," and
could not be claimed as exempt except to
extent of debtor's remaining "allowance" as
exemption. Debtor appealed. The Bankrup-
cy Appellate Panel (BAP), Fatherman,
Chief Judge and Sawyer and Siderman,
JJ, 274 B.R. 206, reversed, and creditor
appealed. The Court of Appeals, Ely, Cir-
cuit Judge, held that because the lump-
sum distribution owed debtor from the
retirement plan was still held in trust by
the plan on the petition date, the funds
were subject to ERISA's anti-alienation
provision and were excludable from the
bankruptcy estate, even though debtor ob-
tained his interest through a QDRS rather
than directly from the plan.

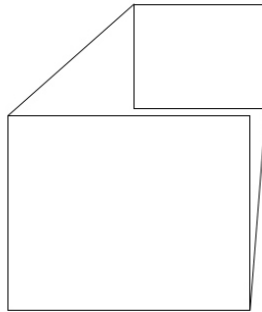
Full Text Page Layer



Grey Layer (35% Opaque)

We reject Schieffler's contention that ERISA's anti-alienation provision does not apply because Ronald obtained his interest through a QDRS rather than directly from the plan. Ronald, as an alternate payee under a QDRS, had beneficiary status under the plain language of ERISA. See 29 U.S.C. §§ 1056(d)(3)(J) & (K).¹ Ronald was a beneficiary of the retirement plan at the time he filed bankruptcy, because the plan was still in the process of determining whether the DRO qualified as a QDRS. A

Text "Pull-Out" Layer



Lines Layer

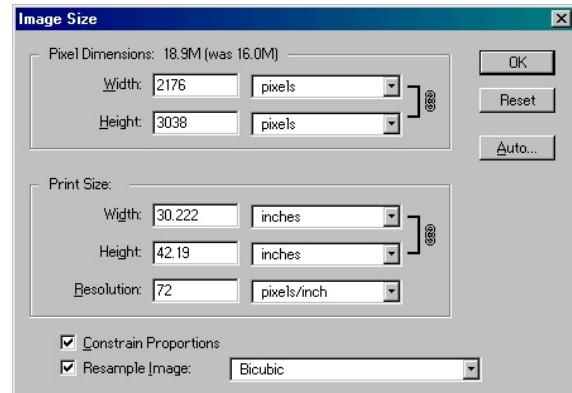


Highlight Layer (75% Opaque)

Note that a large part of most of these layers are transparent. The white between the lines in, for example, the Lines Layer above is actually the white of this page: on Photoshop the underlying parts of the other layers would should through.

Sometimes the original scanned image might also be a little skewed. In Photoshop (and most other graphics software), the cropping frame can be rotated to adjust the image. So if the lines of text aren't perfectly horizontal, rotate the cropping frame to align the text along the horizontal axis.

3) Once your large scanned (or otherwise acquired) image is cropped and centered as needed, re-size it. To do this in Photoshop, select **Image > Image Size**. This brings up the Image Size options, shown here at the right. Note that you can specify that image size be displayed in several ways: image resolution is most often specified as pixels, so if that isn't the current display for the Width and Height of the image, select "pixels" from the pull-down list next to the numeric displays. (In Paint Shop Pro, the command to re-size an image is **Image > Resize**, or **Shift+S**.)



Recall that the target size of a half-screen image that can be imported into CALI Author at an 800x600 screen resolution is 430 pixels in height and 300 pixels in width. The proportion of your scanned image will rarely be exactly the same as 430x300 (i.e., it will be something else besides two numbers with this same ratio). Note that the "Constrain Proportions" option is selected in the Image Size window above. This keeps the ratio of height to width the same as one or the other is adjusted. So when the target height of 430 is entered, Width is automatically adjusted, but will most likely not be 300. BUT, if you are using a template of the target size, you can copy and paste the resized image onto the template, and the excess width of the resized image pasted onto the template will merely not be displayed because it is beyond the boundaries of the template image (and, when exported to a *.JPG or *.GIF (see below), will be cropped off).

Here is an example. Say you have a template page of the size you want all your graphics to be, called **Template.jpg**. And you have an image of a page that you scanned called **ScannedImage.tif**. Here are the steps you would take to create a composite, multi-layered image of a specific size. These steps describe how these tasks are performed in Adobe Photoshop, but these same actions can be performed with Paint Shop Pro and other graphics programs, though the specific commands, of course, will vary.

- open **Template.jpg** (this is your 430x300 JPEG template file with borders, etc.)
- open **ScannedImage.tif** (the large image of the page you scanned in)
- resize **ScannedImage.tif** to 430 pixels in height
- select the entire **ScannedImage.tif** (use **Select > All**, or **Ctrl+A**)
- copy **ScannedImage.tif** with **Edit > Copy** (or **Ctrl+C**)
 - this moves the image to the windows memory buffer
- move to **template.jpg** (click on it, or select it from the Photoshop **Windows** menu)

paste the **ScannedImage.tif** onto **Template.jpg** with **Edit > Paste** or **Ctrl+V**
 - this adds a new layer to **Template.jpg** consisting of the pasted image from **ScannedImage.tif** (do NOT close **ScannedImage.tif** before reading the second paragraph below)
 save **Template.jpg** (now with a new layer) with a NEW NAME using **File > Save As**, or **Shift+Ctrl+S**
 - note that with two layers, Photoshop will *require* you to save it as a *.PSD, so give it a new name such as **JonesVSmith-Page1.PSD**

Now you will have a new image consisting of your template page with the resized image from **ScannedImage.tif** copied onto it as an additional layer. You can re-order the layers, by selecting and dragging their listing in the Layers tab (see the graphic on page seven) up or down, so that the text is underneath the borders in your template image (if, of course, the center part of the template border is transparent so that the text can show through, as is shown at the graphic at the right).



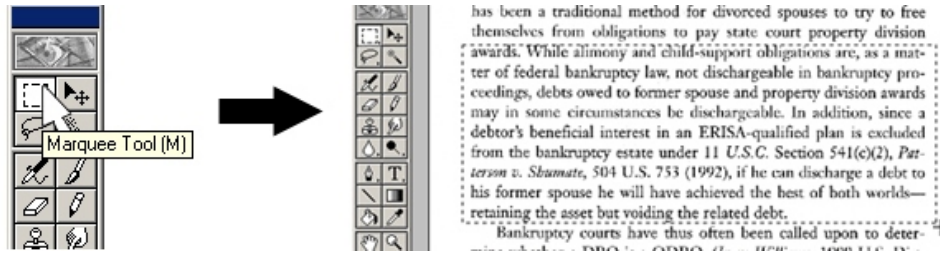
So what about the original, big **ScannedImage.tif**? Remember, it was resized down to 430 pixels in height. But as shown earlier, a full page of text probably won't be readable when fit on a computer screen in its entirety. Next, you need to create a "pull-out" portion of the important text. So you'll still need the original page at its large resolution. After you have resized it down to 430 pixels in height, copied the page and pasted it onto the image that becomes **JonesVSmith-Page1.psd**, close **ScannedImage.tif**, WITHOUT saving the changes! This is contrary to habit, but remember, you want to keep your original scans unaltered so you can come back to them later. So close **ScannedImage.tif**, and, because you resized it, the software will prompt you with something like "Save Changes to ScannedImage.tif Before Closing?" but, no, you DON'T want to save the changes. You already grabbed the 430x300 version of this page you needed, and you copied it over to your *.PSD file, but you want the big, 2176x3038, original TIF, so answer NO and the file will close.

When you open **ScannedImage.tif** again, it will be its original size (note that you might not be able to use the "Undo" command to undo the resizing, because several other commands - select, copy, paste - will have intervened and in most graphics software, the Undo command is only available immediately after executing a command).

Here's the next series of steps (note that **JonesVSmith-Page1.PSD** is *still* open)

open **ScannedImage.tif**, now back at its original, large resolution (as described above) use the Marquee tool to select the portion of the text you want viewers to focus on in the "pull-out" section, as is shown below (note that the cursor changes from an arrow

to a cross when you open the Marquee tool to select a part of an image, as shown below)



with the text selected, copy it with **Edit > Copy** (or **Ctrl+C**); this places the selected text in the Windows Clipboard, viewable with the Clipboard View (see page 5) you may need to resize this selected text; to do this, create a new, temporary file with **File > New**; this file will be used just to resize this text and so will not be saved and does not need a name; Photoshop will automatically specify that the new file be the size of the text you just selected and copied from **ScannedImage.tif** (and now in the Windows Clipboard)

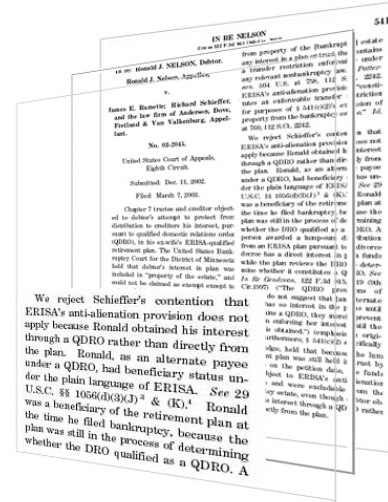
paste the selected text with **Edit > Paste** (or **Ctrl+V**) into the new file
 resize the new file containing the selected text using **Image > Image Size**; specify a width that is maybe 50 to 100 pixels less than the width of the **JonesVSmith-Page1.PSD**

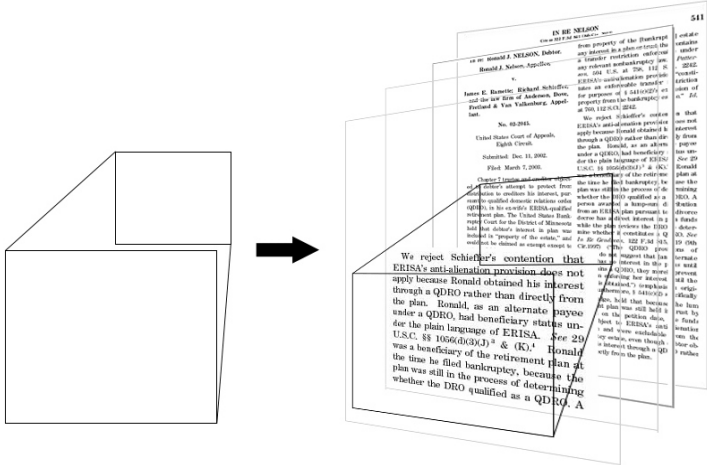
once the new file with the selected text is resized, select it with **Edit > Copy** (or **Ctrl+C**)
 go back to **JonesVSmith-Page1.PSD** and paste in the selected text from the new file with **Edit > Paste** (or **Ctrl+V**)

- this adds a third layer to the image, with just the selected text (as is shown at the right)

Be sure to save **JonesVSmith-Page1.PSD** after adding this third layer! Note that because the selected, large-sized text takes up only part of the whole graphic, the rest of that layer is transparent. You can use the MOVE tool (the arrow-head tool next to the Marquee tool shown earlier) to slide the active layer around; this lets you place the copied paragraph anywhere in the image so, for example, no important parts of the underlying full page is obscured.

You can continue to add additional layers for each element of the final image. If you need a new layer to draw on (versus pasting in copied material to create a layer), you can add a new layer from the pull-down menus in Photoshop with **Layer > New > Layer**.





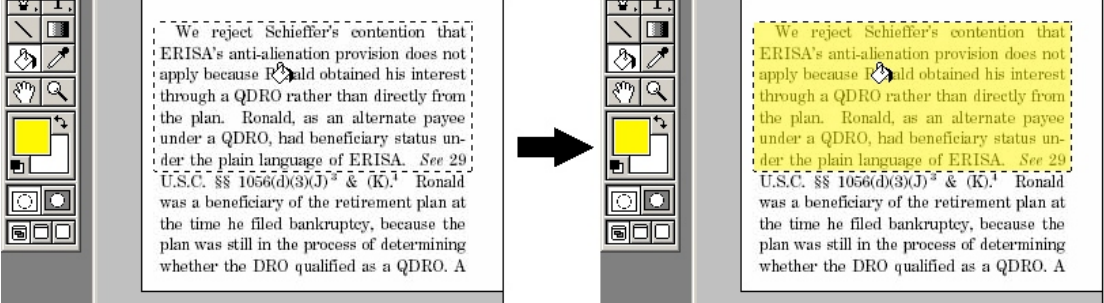
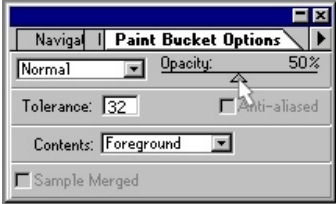
For example use the pencil, paintbrush, line or other tools to draw lines, highlights, and other items on a new layer. Again, just like a transparency, what you draw on a new layer will be superimposed over the layers beneath, but **not** drawn directly on the other elements *of* the image. This is how the outlines and “focus-pull” lines for the paragraph of text in the example (shown at the left) were created.

REMEMBER! Save - and save often - as you add layers, make changes, edit, etc., etc.

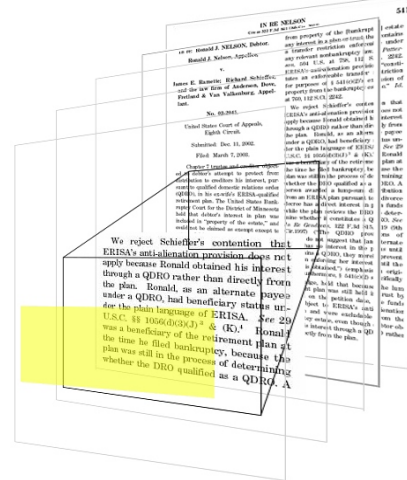
Another element you might want to add is a transparent highlight element. Just like a highlighter marker on a page, this draws attention to a selection of text with a transparent patch of color over it. There are several ways to do this in Photoshop. One way is with the Paint Bucket tool on a new layer. You can use the Marquee tool (as shown earlier) to select the portion of that new layer over the text in an underlying layer you want to highlight, then select the color you want to use to highlight, and use the Paint Bucket tool to “pour” the color over the selected portion of the layer. The key is that you want the highlight to be transparent.

Most tools in Photoshop have options that can be adjusted if you need a particular tool “tweaked” in a certain way. The available options for a given tool can be found under the Options Tab. (If you don’t see the Options Tab, go to **Windows < Show Options** to bring the Tab up; in Photoshop Elements 2.0 the Options Window is below the main menu bars at the top of the screen.)

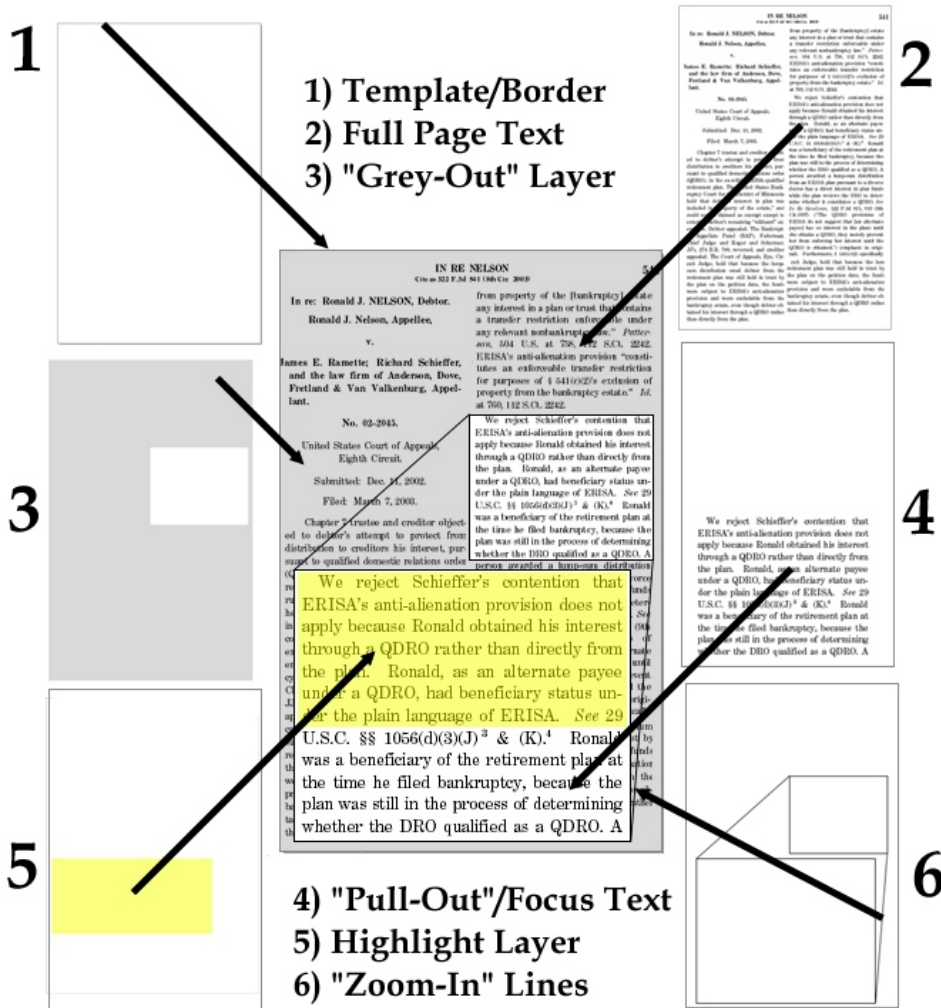
At the right is the Options Tab for the Paint Bucket: by adjusting the slider control for Opacity, you can adjust how opaque the Paint Bucket will paint the selected portion of the graphic: thirty to fifty percent opacity is usually a good setting, depending on the color used for the highlight and what is to be highlighted.



(Note that CALI and other software graphics can easily handle colors, but this handout was printed out in Black and White.) In the graphic on the previous page, the left side show the selected text to be highlighted, and the right side shows the Paint Bucket tool after “pouring” the yellow paint at 50% opacity. Remember, this is on a separate layer and so is *not* “painted” directly on the underlying text (see the representation of all these layers, shown at the right). Therefore, if you want to go back and re-do this highlight, you can erase all or part of it without erasing the text beneath.



To hopefully make it clearer, here’s all the component layers used to make this image:

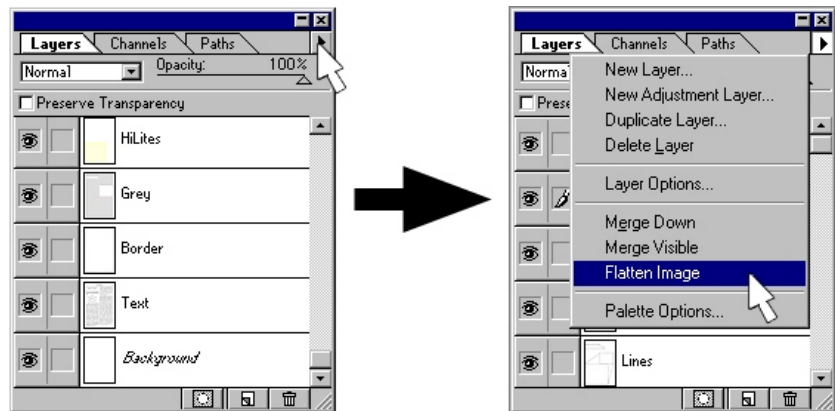


Step 3: Image Exportation

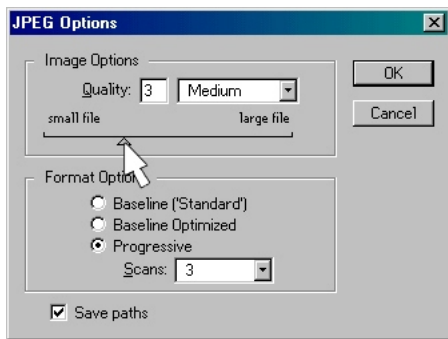
Finally, when you have this multi-layer *.PSD file as you want it, you need to convert it to a usable format, such as a *.JPG file. But you will want to be sure to keep this *.PSD file intact, with all the layers separate, in case you want to come back and change something. So, save the *.PSD file one final time.

Notice that if you try **File > Save As** command from the menus, you can only save the image as another *.PSD. That is because the multiple layers are only available in the proprietary Photoshop formats. To save it as another format, we must first flatten the image with, appropriately enough, the Flatten Image command. (In Paint Shop Pro, you *can* directly save a *.PSP file as a *.JPG: a message will warn you that the layers will be merged when you do this.)

You can access the Photoshop Flatten Image command through **Layer > Flatten Image** from the top of the screen, or from the Layers Menu at the upper right hand corner of the Layers tab, as is shown in the graphic at the right.



Now, you can use the **File > Save As** command, and use the pull-down list for the “Save As” field in the pop-up window to select the *.JPG format.



Next, you will get the JPEG Options pop-up window, shown here at the left. This is a very useful option: *.JPGs are compressed graphics and this option lets you set the quality of the image and vary the compression, and thus the resulting file size, of the *.JPG file you are about to create. If you are creating graphics for a slide show that you can run off your local network, file size probably won't be an issue.

But if you're creating any graphics that may be sent or retrieved over the web, file size is an important consideration. And because all new CALI exercises are made available on the web, it is a good idea to try to use graphics that have as small a file size as possible. (Note that by “file size”, we are talking about the amount of disk space the image takes up on a computer; the “image size”, the resolution - i.e., 430x300 pixels, is the dimensions of the image on the screen.) In Paint Shop Pro, there is a button for “Options” in the pop-up window that appears when you select the **File > Save As** command: you can specify the level of compression in those options.

A full color landscape photographs will look much different as a low-quality, small file sized *.JPG versus a high-quality, large file sized *.JPG. But when dealing with just black and white image of printed text (with, perhaps, a little yellow highlight included), *.JPGs can be compressed to a very small size and still be as clear as the original. So the Medium Quality of “3” shown in the illustration, or even a greater level of compression and a smaller file, will still produce a good image, but may be anywhere from half to one-fourth as small a file size as a high quality *.JPG file.

CONCLUSION

This handout has provided what I hope is a concise summary of the techniques used to create graphics that can represent pages of text on computer screens in format useful for both the self-paced instruction found in CALI lessons and more traditional classroom lectures. With practice, these techniques can form the foundation for more advanced graphics work. If you can visualize it, you can create it.

APPENDIX - SOFTWARE PRICING AND COMPARISON

Adobe Photoshop CS (New upgrade from version 7)

<http://www.adobe.com/products/photoshop/main.html>

\$649 list price, probably around \$300 with an academic discount

Photoshop is the “industry standard” but most of the advanced tools not available in other software packages will be for your high-end professional digital photo and graphics artists. Previous versions can possibly still be purchased. (Note that all graphics for this handout and the 2004 CALI Conference were created with Adobe Photoshop 4.) There is a 30-day tryout version of Photoshop CS available on the Adobe web site.

Adobe Photoshop Elements 2.0

<http://www.adobe.com/products/photoshopel/main.html>

\$99 list, around \$50.00 with an academic discount

This is “Photoshop Lite” and was probably released to compete with other more reasonably-priced packages. It doesn’t include many of the professional image manipulation tools referred to above, but includes all the tools needed to work with layers, crop and resize images, and perform the other techniques described in this handout. There is a time-limited tryout version of Photoshop Elements 2.0 on the Adobe web site as well.

Paint Shop Pro 8

<http://www.jasc.com/products/paintshoppro/>

\$84 list price, downloaded, around \$50 with an academic discount

The latest version of Paint Shop Pro has most of the same tools that Photoshop does. All of the techniques described in this handout can be performed with Paint Shop Pro 8. The specific commands and layout are very different, but the included documentation looks to be very thorough.