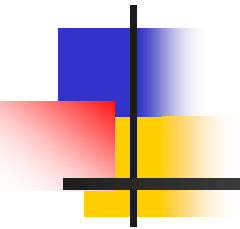


Document and Photo Imaging

for digital publishing



Roger W. Ehrich
CS Department
Virginia Tech



Image Sources

- Digital Camera
- Photo CD
- Flatbed Scanner
- Negative/Transparency Scanner



Handy Imaging Software

■ Imaging

- Photoshop 7 \$600
- Photoshop Elements 2 \$70
- JASC Paint Shop Pro 7 \$109

■ Slide Sorters

- ACDSee 4 \$50
- JASC After Shot \$49
- Photo Wizard Free in XP

■ Text Editor

- Notepad Free
- PFE Free
- Ultra Edit \$35



Set your display!

- Buy the largest monitor you have space for
- Make sure the monitor color is reasonable (white should not look like magenta)
- Set your display adapter resolution
 - in Properties/Settings/Screen Area
 - 15": 800 x 600 67 dpi
 - 17": 1024 x 768 75 dpi
 - 19": 1280 x 960 84 dpi
- Set your color depth as large as possible
 - in Properties/Settings/Colors
 - 24-bit or 32-bit: 16 million colors



Are LCD monitors ok?

- Many of the new ones are superb
- Check the contrast ratio... $> 400:1$ is good
- Check the viewing angle
- Is the intensity and color uniform across the screen?
- Get the highest resolution you can afford, and set your adaptor to that resolution
- If possible, get a monitor and an adapter with a digital video (DVI) interface rather than analog



About GIF image format

- At best, displays 256 different colors or 256 grey levels
- Used for text, graphics, but not photos
- Images are compressed without loss
- Two versions: 87a and 89a
- 89a permits transparency and gif animation



About JPEG image format

- Best for photos
- Images are compressed with loss
- Low compression ratios (up to 5:1) are extremely good
- High compression ratios (over 20:1) are poor and show “the blockies”
- Work from originals... images saved as JPEG images should not be compressed again



Short WWW browser review

- Displays .jpg, .gif, .txt, .html files
- To view a local file on your computer:
 - File/OpenPage (Netscape)
 - File/Open (Explorer)
- To view the source of the file currently displayed
 - View/Page Source (Netscape)
 - View Source (Explorer)



What is different about screen publishing?

- Color
- Resolution (much lower)
- Hypertext
- Dynamically resizable displays
- Digital



Getting started with a publication

- Make a storyboard that shows where you want to lay out your images and text on the screen
- Decide on the screen size of your target audience
- Compute the dimensions of the images you want to produce
- Choose a publication language like pdf or html

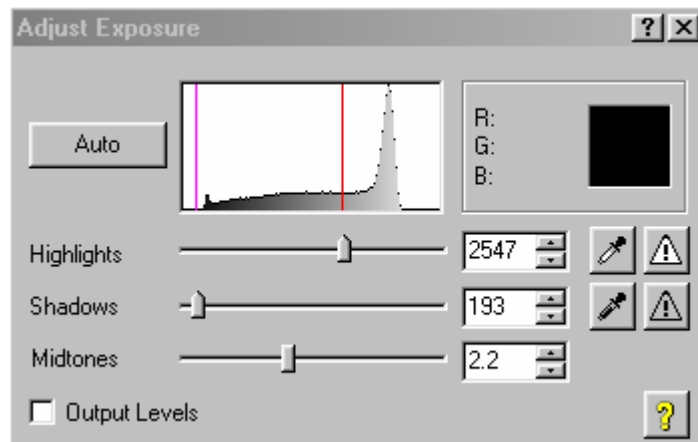


Why publish in HTML?

- Easily published
- Easily reproduced and distributed
- Universally readable
- Dynamically scaled to screen window
- Hypertext-capable
- No publishing software needed
- High quality graphics

Photos: the easy stuff

- Digitize to the highest practical resolution (at least, 200 dpi)
- Set the scanner to greyscale if you are scanning a B&W photo
- Set the dynamic range correctly



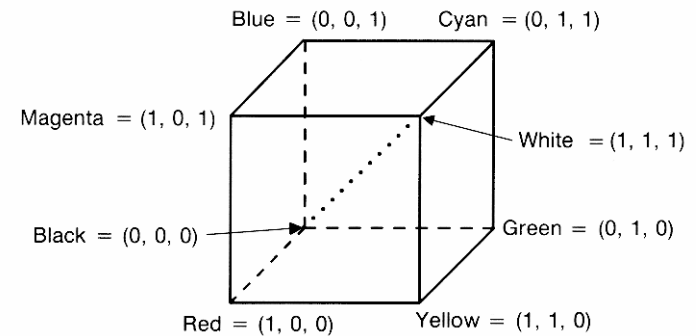
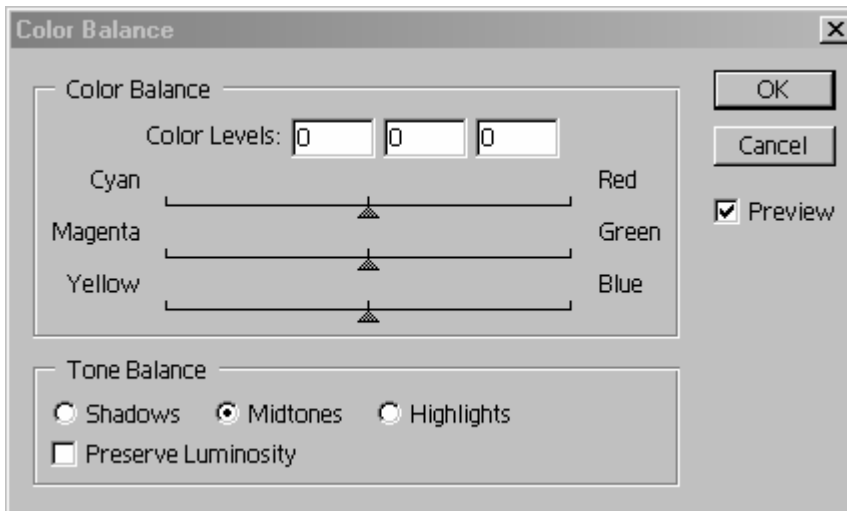
HP5470c



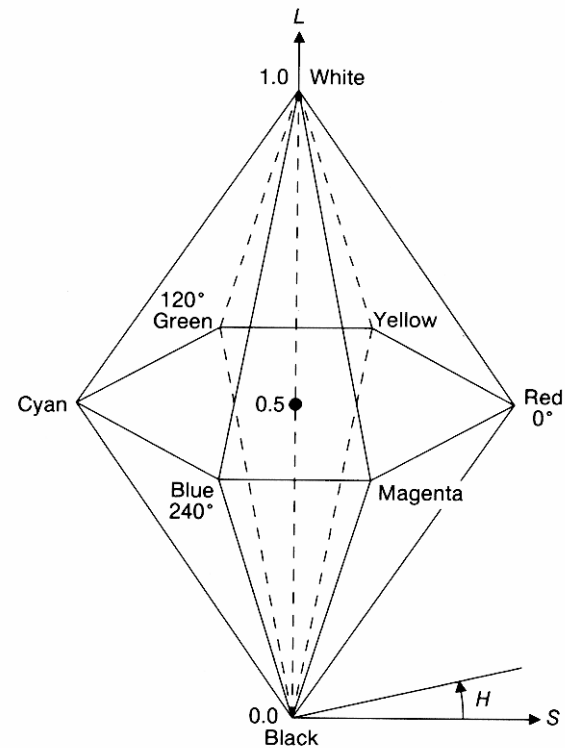
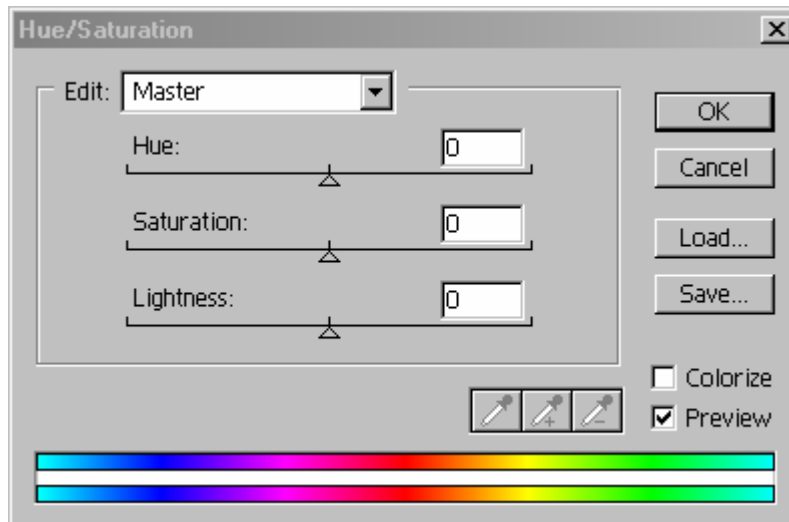
Photos (continued)

- Resample to desired resolution
- Crop to desired dimensions
- Sharpen, if desired
- Adjust brightness and contrast
- Adjust color

RGB color model

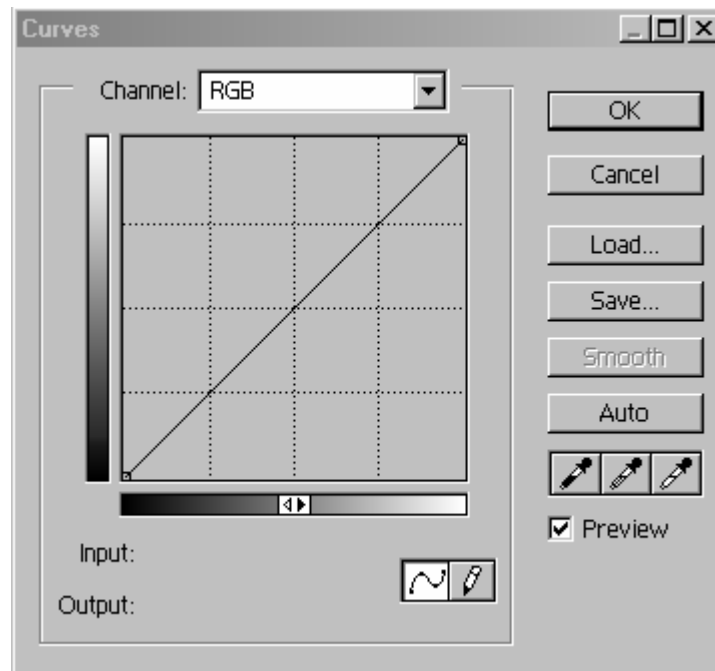


HLS color model



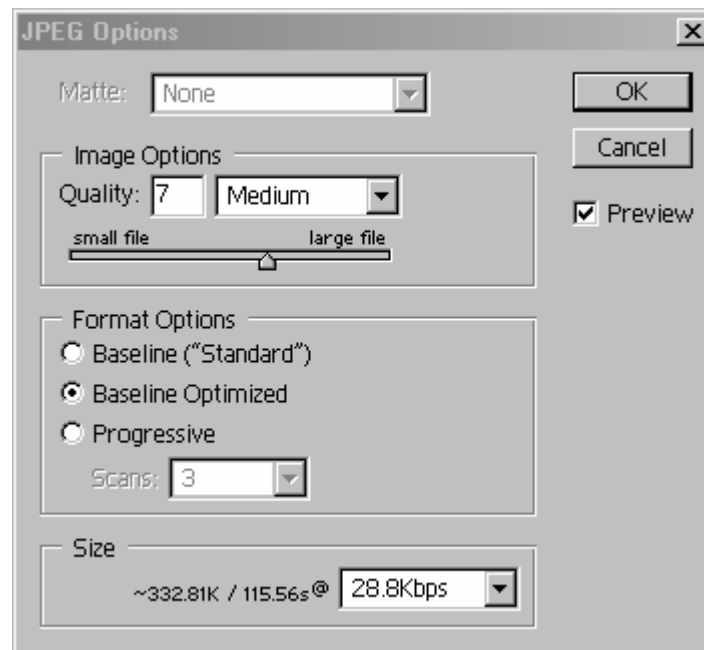
Photos (continued)

- Burn and dodge
- Adjust mid-range brightness



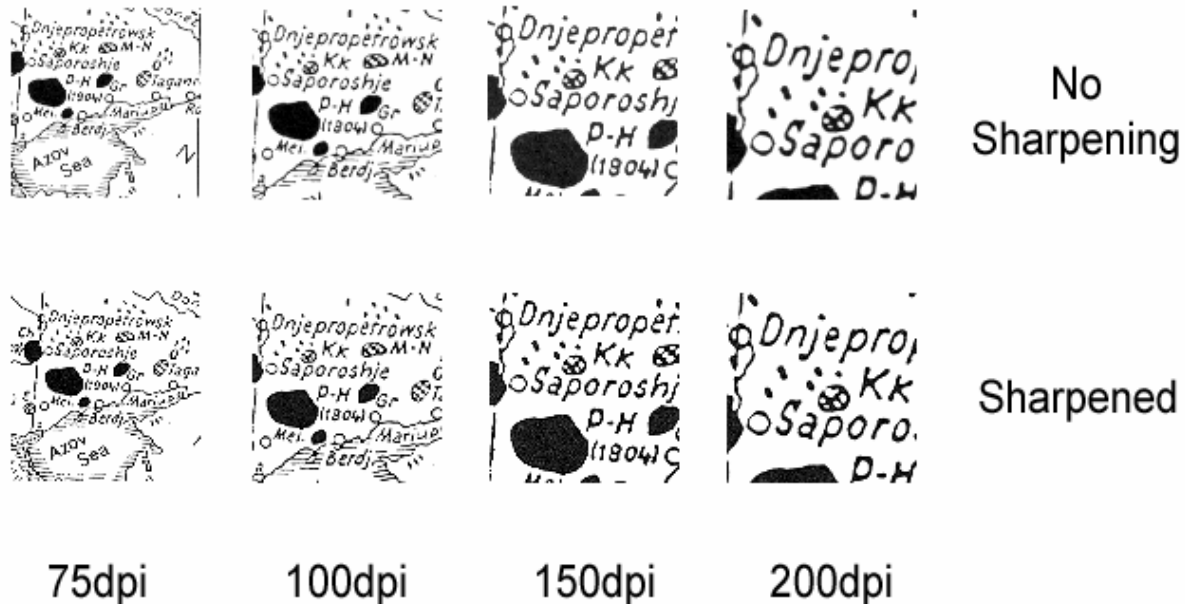
Photos (continued)

- Touch up defects
- Save as a new JPEG image



Maps – saved as GIF

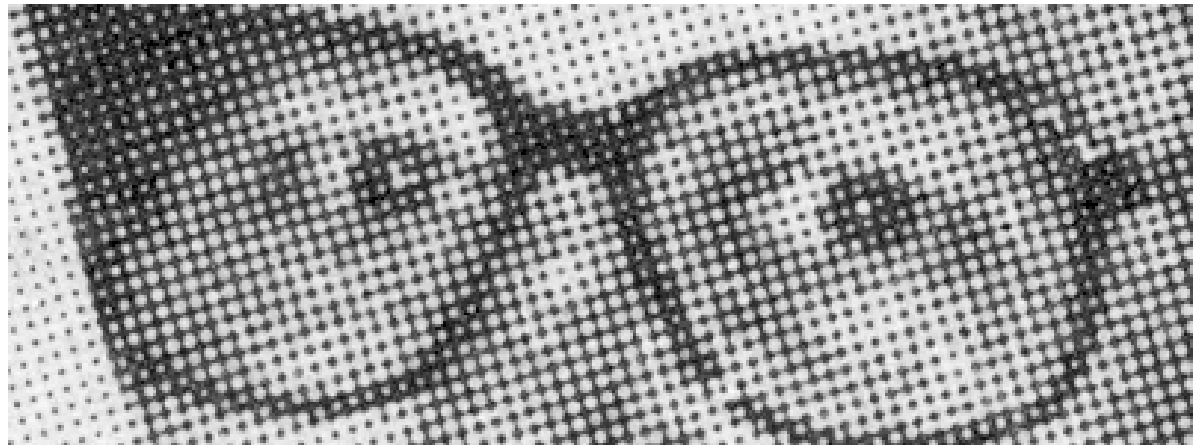
- Detailed maps will not fit on a screen



100 x 100 pixel samples of a scanned map

What about scanning halftones?

- Published photos are halftoned
- When scanned, the scanning pattern interacts with the halftone pattern to produce a Moiré pattern





Counterintuitive process

- Scan at high resolution (300dpi) with scanner sharpening off
- Blur (defocus) the image, if the scanner won't
- Resample at a low resolution (75dpi): halftones at higher resolution than the screen frequency carry no more information
- Sharpen the resampled image

Halftone processing



75dpi



100dpi



150dpi



300dpi
resampled at 75dpi



300dpi
resampled at 75dpi
sharpened



300dpi, no sharpening

Digitizing a halftoned image



A little introduction to HTML

- Write it with a text editor: HTML is written in plain text
- Don't make HTML resize images... they won't look as good as the originals
- Good places to learn some HTML:
 - <http://archive.ncsa.uiuc.edu/General/Internet/WWW/HTMLPrimerAll.html>
 - <http://www.utoronto.ca/webdocs/HTMLdocs/NewHTML/htmlindex.html>

Something simple that works

```
<html><head><title>My Family</title></head>  
<body bgcolor="white">
```

```
<center><h1>My Family</h1>
```

```
</center><p>
```

Hi, so here's my family. Aren't they a proud-looking team? Dad is in the top row left. Unfortunately grandma and grandpa died in Königsberg before I came into the world and before its destruction. Little Fritz on grandma's lap died young of blood poisoning from a practical joke... a thumbtack placed on his chair. The others lived happy lives after the war in the Rhineland except for Lena, holding the paper. She died in a resettlement camp in Denmark.

```
</body></html>
```



Take home ideas

- Care taken with your images is time consuming but well worth the effort.
- Consider digital publishing instead of paper publishing when you write your family photo history.
- Consider publishing in HTML... it's free and offers many features.