

Digital Photography?

Why Digital Photography?

- Everyone else is
- I want new technology
- It's cheaper
- Instant preview
- PowerPoint presentations
- Email photos
- Create web sites
- Create work to go to print
 - Brochures, newsletters, etc.

Why Not Film Photography?

- It's old fashioned, digital is new
- Expensive
- Film storage is a hassle
- No instant preview

4 Basic Rules

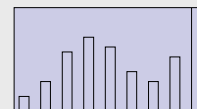
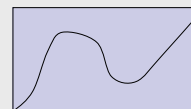
- #1 – Don't rush to highest megapixels.
- #2 – Stay with camera manufacturers
- #3 – Accessories
- #4 – Prepare to climb the learning curve

The Technology

- Learning Curve – Are you ready?
- Terminology
 - Resolution?
 - Pixels and megapixels?
 - Interpolation
 - White balance?
 - Cameras?
 - Memory cards?

Two Systems

- Traditional
 - Analog - continuous from one point to the next
- Digital
 - Sampling



Resolution

- As the number of samples increases, the quality of the image improves
- Closer to approaching analog quality

Pixels

- Pixel
 - pix = picture
 - el = element
- Resolution is expressed in pixels
- $2048 \times 1536 = 3145728$
 - Or 3.2 megapixels

Resolution

- Digital image - samples at regular intervals
 - As samples increase, resolution increases
 - Increasing resolution approaches analog quality

Resolution

Record mode	Description	Quality	File size
SHQ	<ul style="list-style-type: none"> A high quality mode. Fewer images can be saved to a card. Takes longer to store the images. 	↑ Clearer	↑ Larger
HQ	<ul style="list-style-type: none"> Uses Good for printing. Can be enlarged to A4 (210mm x 297mm / 8.27" x 11.71") size. Good for processing on a PC. Factory default setting. 		
SQ1/SQ2	<ul style="list-style-type: none"> The resolutions are smaller than in SHQ or HQ. A standard quality mode. More images can be saved to a card. 	↓ Normal	↓ Smaller

Interpolation

- When an image is enlarged beyond the optimal number of pixels
- Used to increase the apparent resolution of an image
- Intermediate shades of gray or color are added to surrounding areas
- Reduces jagged appearance, but fuzzier

White Balance

- Varying exposures according to lighting conditions
- Auto – white balance is automatically adjusted

	(Sunlight)	Natural colors under a clear sky
	(Overcast)	Natural colors under a cloudy sky
	(Tungsten)	Natural colors under tungsten lighting
	(Fluorescent)	Natural colors under fluorescent lighting

Image Capture

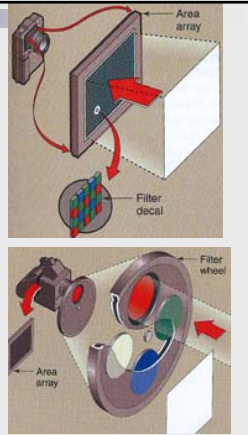
- CCDs- Charged Coupled Devices
 - Light sensitive cells (pixels) on a computer chip that convert light to digital pulses
 - Each light sensitive cell is known as a photo site: each photo site = 1 pixel
 - More pixels, better resolution

Image Capture

- CMOS rather than CCD's
 - Complimentary metal oxide semiconductor
- Advantages
 - Use 100 x less power than CCD's
 - Lower cost
 - Better low light performance

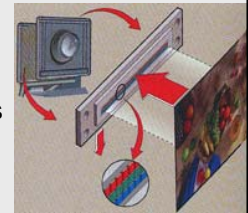
Area Array

- Dyed photo sites
 - Red, Blue, Green
 - Flash Compatible
 - Freeze action
- Non-dyed photo sites
 - Multiple filtered images for a single capture
 - Still subjects



Linear Array

- Trilinear - one line each; red, green, blue
- One pass or three
- Similar to a scanner
- Stationary subjects
- Continuous light sources



Digital Advantages

- Film costs eliminated
- Environmentally safer
- Ready images for print, projection, e-mail & web
- Time

Digital Disadvantages

- Storage
 - Digital cameras- fixed capacity
 - Memory card- must download
 - Download to hard drive
 - Save to CD
- Costs
- Quality - resolution

Applications

- Highend
 - Jobs-to-print
 - Catalogs
 - Portraits
 - Annual Reports
- Low end
 - On-line applications
 - Small shots
 - Projection
 - Real estate

Dicomed BigShot 4000

- Resolution - 4096 x 4096
- Full format 6 x 6 cm
- 48 mb file capture
- Hasselblad 553 camera
 - \$2995.00
- Tethered to computer
- \$54,900



Canon EOS-10D

- Resolution: 3072x2048
- File Size: 2.4MB
- 6.3 Megapixel
- CMOS sensor
- EOS Camera body
- \$1,499.95



Olympus E20-N

- 5.0 megapixel
- SmartMedia &/or Compact Flash
- Interchangeable lenses
- LCD preview
- \$1239



Olympus Stylus 300 & 400

- 300
 - 3.2 megapixel
 - \$310 at Amazon
- 400
 - 4 megapixel
 - \$371 at Amazon
- xd Cards
- ccd capture



Nikon CoolPix

- 2.1 megapixel
- \$149 after rebate at Ritz



Memory cards

- Compact flash
- Smart media
- xd Card
- sd Card
- Memory stick
- Floppy disk

