



MICHAEL LOVERME
Memorial Foundation

Digital Camera Equipment & Usage

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28 March 2015

Agenda

- * About the Michael LoVerme Foundation
- * Types of Digital Cameras
- * Digital Camera Sensors
- * Digital Camera Comparisons
- * Lenses
- * Other Camera Equipment
- * Aperture
- * Shutter Speed
- * Film Speed (ISO)

Michael LoVerme on Photography



* <http://michaelloverme.com/category/videos/>

Types of Digital Cameras

- * Point and Shoot (Compact)
- * DSLR (Digital Single Lens Reflex)
 - * Compact
 - * Medium
 - * Large
- * Phone & Tablet Cameras

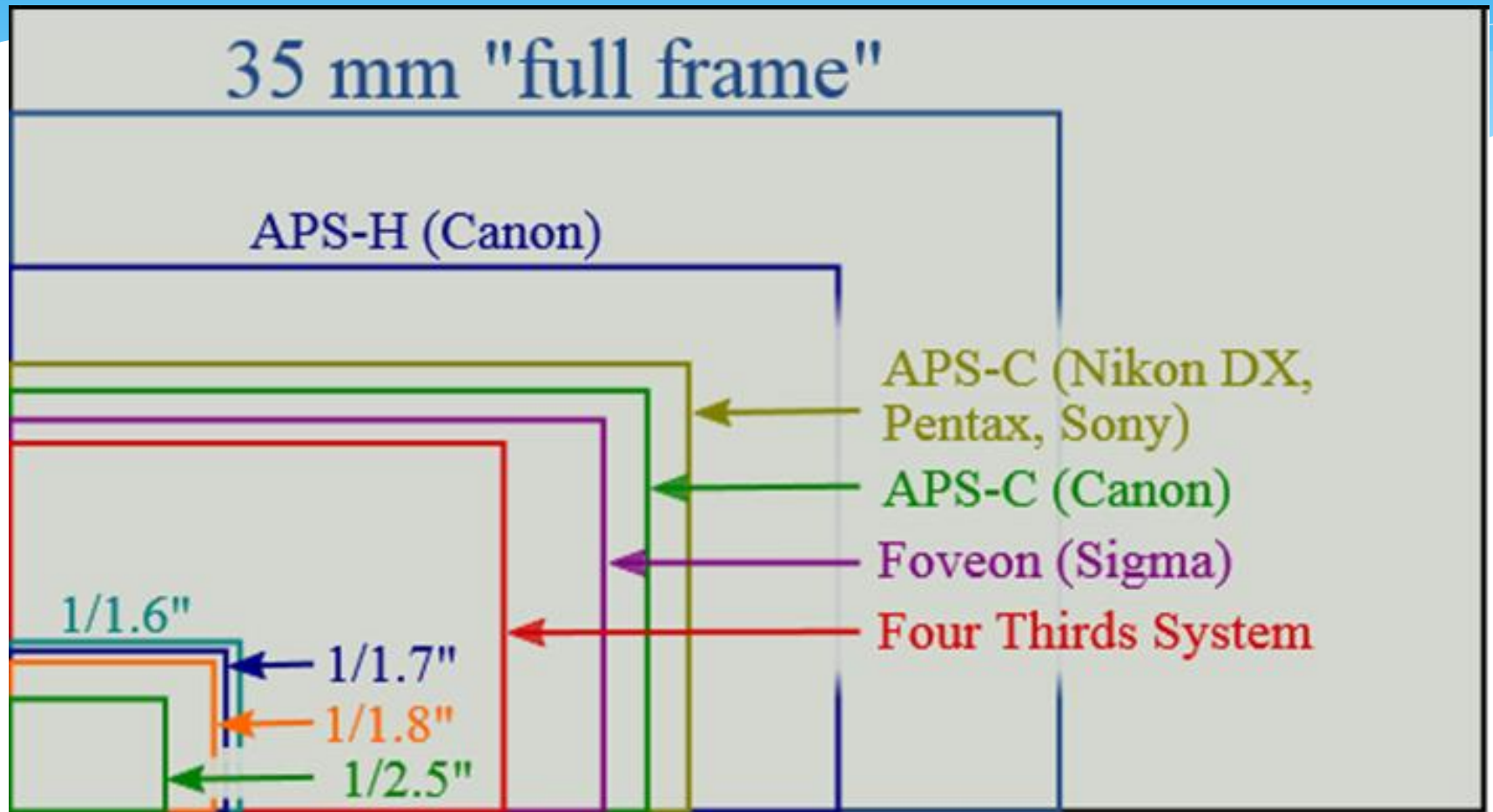
Point-And-Shoot vs. DSLR

- * Point-And-Shoot - Compact
 - * Smaller, Lighter, Cheaper
 - * Similar megapixel sensor sizes available
 - * But pixels are not the same as those in DSLRs
 - * Very small sensor = very small pixels
 - * If it has a viewfinder, it does NOT view through the main lens
 - * Some are waterproof
 - * Fixed lens included, usually with electronic zoom
 - * Optical Zoom vs. Digital Zoom
 - * All images compressed (Not RAW)
 - * Can take very good pictures

DSLR (Digital Single Lens Reflex)

- * Various sizes - Compact, Medium, Large
- * Large price range \$500 to \$7,000+
- * Larger sensors – Higher quality pictures
 - * APS-C or Full-Frame
- * Removable lenses
 - * Higher quality & versatility
- * Allows use of lens filters
 - * Lens protection, polarizing, colors, special effects
- * You see what the sensor sees
- * External Flash option

Sensor Size Comparison



Camera Comparison



Canon PowerShot SX700 HS



Nikon D5200



Nikon D800



Nikon D4s

Camera Comparison

| Camera | Canon PowerShot SX700 HS | Nikon D5200 | Nikon D800 | Nikon D4s |
|------------------------|---------------------------------------|---|--|---------------------------------------|
| Price | \$295 (Amazon.com) | \$697 w/ 18-55mm lens \$597 body only (Amazon.com) | \$2,797 body only (Amazon.com) | \$6,497 body only (Amazon.com) |
| Date Introduced | Feb 12, 2014 | Nov 6, 2012 | Feb 7, 2012 | Feb 25, 2014 |
| Body type | Compact | Compact SLR | Mid-size SLR | Large SLR |
| Effective pixels | 16 megapixels | 24 megapixels | 36 megapixels | 16 megapixels |
| Sensor photo detectors | 17 megapixels | 25 megapixels | 37 megapixels | 17 megapixels |
| Sensor Size | 1/2.3" (6.17 x 4.55 mm) | APS-C (23.5 x 15.6 mm) | Full frame (35.9 x 24mm) | Full frame (35.9 x 24 mm) |
| Sensor type | BSI-CMOS | CMOS | CMOS | CMOS |
| Processor | Digic 6 | Expeed 3 | Expeed 3 | Expeed 4 |
| Uncompressed format | No | RAW | RAW | RAW, TIFF |
| Number of focus points | 9 | 39 | 51 | 51 |
| Lens mount | | Nikon F | Nikon F | Nikon F |
| Articulated LCD | Fixed | Fully articulated | Fixed | Fixed |
| Screen size | 3" | 3" | 3.2" | 3.2" |
| Continuous drive | 8.5 fps | 3 fps | 4 fps | 11 fps |
| Remote control | No | Yes (Optional ML-L3 or WR-R10) | Yes (Optional, wired or wireless) | Yes (wired or wireless) |
| Environmentally sealed | No | No | Yes (Water and dust resistant) | Yes (Water and dust resistant) |
| Weight | 269 g (0.59 lb / 9.49 oz) | 555 g (1.22 lb / 19.58oz) | 1000 g (2.20 lb / 35.27oz) | 1350g (2.98 lb / 47.62 oz.) |
| Dimensions | 113 x 66 x 35 mm (4.45 x 2.6 x 1.38") | 129 x 98 x 78 mm (5.08 x 3.86 x 3.07") | 146 x 123 x 82 mm(5.75 x 4.84 x 3.23") | 160 x 157 x 91 mm(6.3 x 6.18 x 3.58") |

Removable Lenses

- * Types of Removable Lenses
 - * Wide angle < 50mm
 - * Normal 50mm – 60mm
 - * Telephoto > 60mm
 - * Zoom
 - * Macro (close-ups)
- * Lenses are matched to Sensor size
 - * APS-C Lenses will fit on Full Frame cameras but you won't be happy with the quality of the picture

Lens Focal Length Comparison

WIDE



15mm
Fisheye



180°



20mm



94°



28mm



75°



35mm



63°



50mm



46°



85mm



28° 30'

Lens Focal Length Comparison



135mm



18°



200mm



12°



300mm



8° 15'



400mm



6° 10'



600mm



4° 10'



1200mm



2° 5'

TELE

Handy DSLR Options

- * Lens filters
 - * *Tip: Always keep a UV filter on your lens to protect it from scratching and to keep it clean*
 - * Polarization – cuts reflective glare
 - * Colors for special effects
- * Remote Control
- * Camera Case
- * Tripod – matched to size/weight of your camera
- * Monopod
- * Camera control software via USB

Mechanics of Aperture

- * Also known as F-stop or Focal Ratio
- * Analogous to the eye's pupil
- * It is the size of the hole in the lens
 - * Big hole – lots of light
 - * Little hole – very little light
- * Common F-Stops:
 - * 2, 2.8, 4, 5.6, 8, 11, 16
 - * *Tip: Generally, the lower the F Number available, the better the lens. Buy the best lens you can afford.*

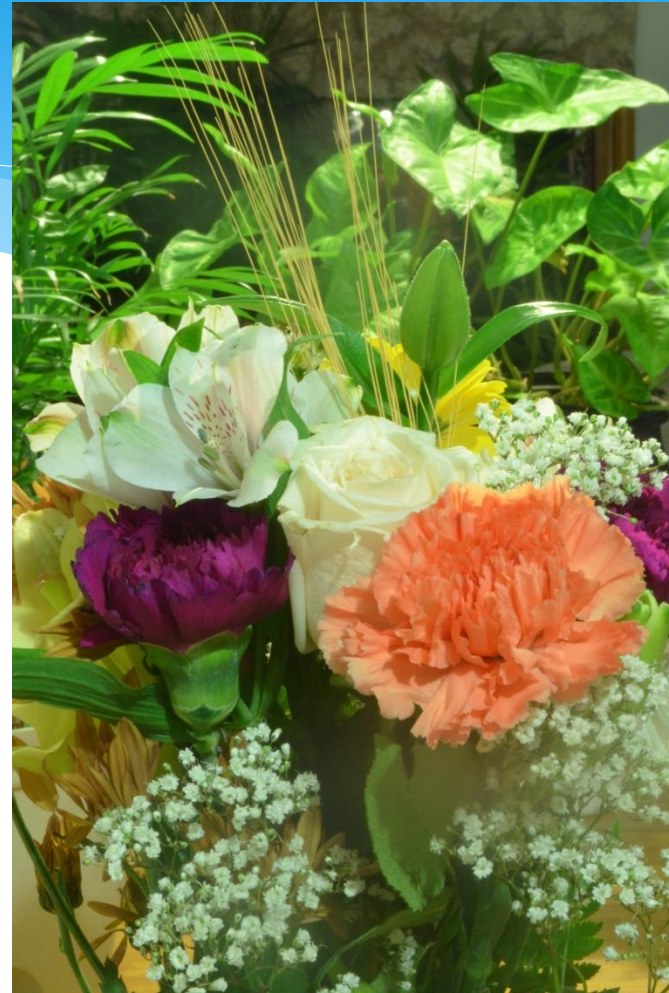
Creativity of Aperture

- * Why have a variable aperture?
- * Depth-of-Field
 - * Amount of objects at varying distances that are in focus
 - * Increases with higher F-Stops
- * At F2 just your subject will be in focus
- * At F16 just about everything will be in focus

Creativity of Aperture



Aperture: F/5.6
Shutter: ½ Sec
ISO: 2000



Aperture: F/36
Shutter: 5 Sec
ISO: 2000

Fixing your Aperture

- * Use “Aperture-Priority” Mode
- * You select the Aperture
- * Camera selects the shutter speed
- * You or camera selects the ISO

Mechanics of Shutter Speed

- * How long the shutter remains open
- * Usually expressed as a fraction:
 - * $1/30$, $1/60$, $1/125$, $1/250$, $1/500$, $1/1000$
- * Shutter speeds slower than $1/30$ usually require support – Tripod or Monopod

Creativity of Shutter Speed

- * Very slow shutter speeds allow blurring of moving objects
 - * Waterfalls
 - * Automobile headlights and tail lights
 - * Movement of the stars
- * Very fast shutter speeds freeze fast moving objects
 - * Baseball batter swinging
 - * Water Fountain

Creativity of Shutter Speed



Source: paulos.net

Automobile headlights and tail lights

Fixing your Shutter Speed

- * Use “Shutter-Priority” Mode
- * You select the Shutter Speed
- * Camera selects the Aperture
- * You or camera selects the ISO

Film Speed - ISO

(Formerly known as ASA)

- * Film's or Sensor's sensitivity to light
- * Higher ISO requires less light
- * Use High ISO to avoid using a flash
- * Very high ISOs introduce noise (grain)
- * Example ISO settings
 - * Film: 25, 64, 100, 200, 400, 800, 1000
 - * Digital: Auto, 100 – 6400+

Summary Demonstration

Canon
Because It Counts

Take Creative Control of your photos

A Canon DSLR in Auto mode produces amazing photos, but real creative control comes when you step outside of Auto. Learn the basic elements of Exposure and how simple adjustments create beautiful photo effects.



LEARN > GET STARTED

See how Exposure settings can change a photo



PLAY

Adjust camera settings, take the shot and get feedback



CHALLENGE

Test yourself against the clock.

<http://www.canonoutsideofauto.ca/>

Questions?