



# Edmonton Camera Club

## Introduction to Exposure

and a few other bits!

# Exposure – 3 Variables

1. Aperture – how much light
2. Shutter Speed – for how long
3. Sensitivity – ISO, Film Speed

Also cover:

- Compensation – EV +/-, Creative Control
- Using Flash and Studio Lights

# Exposure

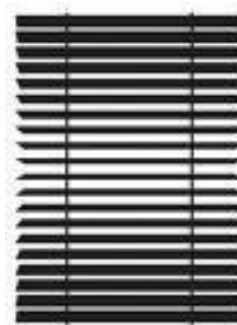
- **Aperture**

- How much light gets to sensor

- Change size of hole

- Venetian blinds

- Iris of the eye



# Exposure

- **Shutter Speed**

- How long light is let in
- Warm room
- Tap - leave running longer  
= more water



- Beware camera shake with slow shutter speeds
- Image Stabilisation

# Exposure

- Combination of **Aperture** and **Shutter Speed** determines how much light reaches the sensor (or film) in the camera
- Bright scene – small aperture and fast shutter speed (sunny day)
- Low light – Wide Aperture and slow Shutter Speed (dusk)

# Exposure

## **Sensitivity/ISO**

how sensitive the sensor is to light

- Film used large grain to increase sensitivity
- Digital uses a “volume control” to increase the signal/gain
- High ISO lets you use faster shutter speed or smaller aperture
- Noise can be a problem with higher ISO

# Exposure

## Sensitivity/ISO

- Can be set to automatic within a range in most cameras
- Camera usually increases ISO value to prevent camera shake if shutter speed is getting too slow
- Need to fix at a value to get creative
- demo

# Modes

- **Auto (A)** – camera decides
- **Program (P)** – similar to Auto but more control
- **Shutter Priority (Tv or S)** – you choose shutter speed, camera sets aperture
- **Aperture Priority (Av or A)** – you choose aperture, camera sets shutter speed
- **Manual (M)** – you set both
- **Picture or Scene** – consumer models
- **Other** – Sv, TAv – dependent on model





# Creative Control

- Use **Shutter speed** to freeze or blur subjects
- Use **Aperture** to change Depth of Field – the amount that is in focus.
  - Small aperture (larger number e.g. f/22) = more in focus (deep)
  - Large Aperture (smaller number e.g. f/2.8) = less in focus (shallow)

# Creative Control

- **Program Shift** – in Program mode the camera sets initial exposure, then you can shift the aperture and shutter speed values as required, while still retaining the same exposure, e.g.  $1/125^{\text{th}}$  sec at f/5.6  $\rightarrow$   $1/60^{\text{th}}$  sec at f/8
- **Hyper Program** – same as Program Shift but you can choose the variable being changed.
- **demo**

# Creative Control

- **Exposure Compensation (EV +/-)** – camera sets initial exposure, then you can shift the exposure to make the image brighter (more light) or darker (less light), e.g. 1/125<sup>th</sup> sec at f/5.6 -> 1/125<sup>th</sup> sec at f/8
- Useful for backlit subjects or if there is a bright light source in the image.
- **demo**

# Using Flash

- Puts a burst of bright light into scene
- Very fast –  $1/30,000^{\text{th}}$  sec
- Some cameras, particularly SLRs, need to set a slowish shutter speed to work with flash, e.g.  $1/25^{\text{th}}$  sec. Due to the way the shutter works. Called the X-sync speed.
- For dark setups, e.g. in the studio, the shutter speed doesn't control the exposure, only the aperture and flash.
- Need PC socket or hotshoe adaptor for studio lights

# Using Flash

- Most studio lights produce a fixed output, so the only variable you can change is the aperture.
- Use **Manual** (M) mode, set the shutter speed to the X value and the aperture to that determined by the flash meter for the ISO you have set.
- Can change distance of flash to subject to change the amount of light
- Dedicated flashguns can be controlled by the camera to change the amount (duration) of light output and hence exposure. Only really usable in automatic mode.

# Exposure

Any Questions?

# Image Size

- What are pixels
- How do they relate to print size

<b>Mp</b>	<b>Image Size (pixels)</b>	<b>Use</b>	<b>Practical Max Print size</b>
10	3872 x 2592	Large Prints	16" x 10", A3+
6	3008 x 2000	Medium Prints	12" x 8", A4,
5	2592 x 1944	Medium Prints	10" x 8",
3	2048 x 1536	EnPrints	8" x 6"
1.3	1280 x 960	Web, Email	5" x 4"

# Image Size



Image on the right has lower resolution set



# Image Quality

- What do the settings mean?
  - Superfine (\*\*\*) - best
  - Fine (\*\*) - better
  - Good (\*) - good
- Implications for storage – higher quality and size, less pictures
- Not relevant for RAW

# Image Quality

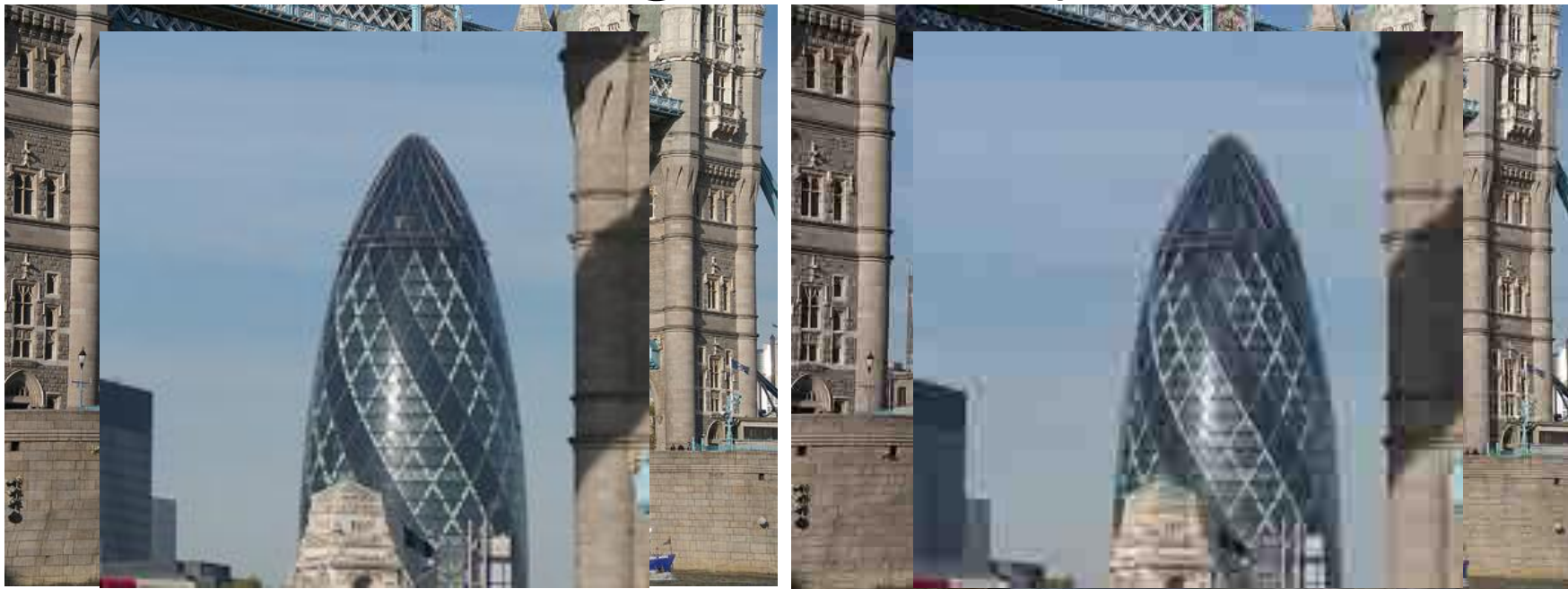


Image on the right uses lower quality (higher compression ratio)

# Image Quality

Any Questions?

# Zooming

- Zoom Controls
- Optical Zoom
- Digital Zoom
- Zoom Range

