Robert Sambak, discussing the fundamental concepts of digital photography
VERY WARM WELCOME PATHFINDERS!!!
WORKSHOP PROGRAMME

- Story of photography
- The principles of digital camera construction and how it works
- The importance of light
- Monochrome camera
- Different lenses
- Image formats and different compression
- Knowledge for a picture well taken
WORLD’S FIRST PHOTOGRAPH

France, 1826

Joseph Nicephore
WORLD’S FIRST CAMERA

- Susse Freres Daguerrotype
- 1839
WORLD’S FIRST DIGITAL CAMERA

- Steve Sasson (Kodak)
- 1975
- 23 seconds to take a picture
MODERN DIGITAL CAMERA

CAMERA BODY
IT’S ABOUT LIGHT!

Photography = drawing with light

Exposure is the total amount of light allowed to fall on the film or image sensor.
Mainly two things let us control the exposure:

- **Aperture**
- **Shutter Speed**

How image brightness changes with shutter speed:

- Quicker Shutter Speed
- Longer Shutter Speed
UNDERSTAND APERTURE
WHAT IS APERTURE?

- (size of) hole or opening where light enters
- Aperture is normally measured in f-stop number
- Higher the f-stop, lower the aperture (and vice-versa)
DIFFERENT APERTURE EXAMPLE
DIFFERENT APERTURE
EXAMPLE

Aperture Adjustment Sequence - DOF

f/1.8  f/2.8  f/4.0

f/5.6  f/16  f/22
WHAT IS SHUTTER SPEED

- Length of time the camera’s shutter is open
- Longer times lead to more light
- Shorter times lead to less light

Shutter Speed Chart

<table>
<thead>
<tr>
<th>SHUTTER SPEED</th>
<th>EXPOSURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;2 secs</td>
<td>Brighter</td>
</tr>
<tr>
<td>1 sec</td>
<td></td>
</tr>
<tr>
<td>1/2</td>
<td></td>
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<td>1/4</td>
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<td>1/8</td>
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<tr>
<td>1/500</td>
<td></td>
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<tr>
<td>1/1000</td>
<td></td>
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</tbody>
</table>

SUBJECT

- Car Trails
- Moving Water
- Panning Vehicles
- Portraiture / Street
- Action Sports
- Birds in Flight
DIFFERENT SHUTTER SPEED
EXAMPLE

Faster speed=
Short Shutter=
Less Light

Motion Freeze

1/200 sec.

Slower speed=
Long Shutter=
More Light

Motion Blur

1/15 sec.
DIFFERENT SHUTTER SPEED
EXAMPLE
DIFFERENT SHUTTER SPEED EXAMPLE
DIFFERENT SHUTTER SPEED

EXAMPLE
In very basic terms, ISO is simply camera’s sensitivity to light.
DIFFERENT ISO EXAMPLE

ISO 100
ISO 200
ISO 400
ISO 800
PERFECTLY EXPOSED PICTURE
COLOUR OR BLACK AND WHITE?

In digital photography, a color filter array, or color filter mosaic, is a mosaic of tiny color filter placed over the pixel sensor of an image sensor to capture color information.

There are some camera that are missing the filter array to create very specific B/W photos.
BLACK AND WHITE
EXAMPLE
BLACK AND WHITE
EXAMPLE
There are 3 main lens category:

- Wide
- Telephoto
- Macro
Focal length 35mm or below are considered wide lenses
TELEPHOTO LENS

Focal length

70mm or above are usually considerate telephoto lenses
MACRO LENS

Focal length

- Various
Most popular Image Format

- JPEG Joint Photographic Expert Group
- PNG Portable Network Graphics
- GIF Graphics Interchange Format
- RAW
There are two kinds of image compression methods: LOSSLESS and LOSSY

- LOSSLESS compression is a method to reduce the size of a file while maintaining the same quality as before it was compressed.

- In order to give an even smaller size, LOSSY compression discard some parts of a photo.
DIFFERENT STYLE
DIFFERENT PHOTOGRAPH

- Portrait
- Photojournalism
- Fashion
- Sport
- Architectural
A Pixel is the smallest unit of a digital image or graphic that can be displayed and represented on a digital display device. Pixels are combined to form a complete image, video, text or any visible thing on a computer display.
Resolution refers to the number of pixels in an image. Resolution is sometimes identified by the width and height of the image as well as the total number of pixels in the image. For example, an image that is 2048 pixel wide and 1536 pixel high will contain (2048 x 1536) 3,145,728 pixels or more commonly 3.1 Megapixel.
Now that we know how to take a perfectly exposed picture we need to understand where to put the main subject that we want to take picture of.
In digital photography, framing is the presentation of visual elements in an image, especially the placement of the subject in relation to other objects. Framing can make an image more aesthetically pleasing and keep the viewer’s focus on the “framed” object.
FRAMING EXAMPLE
USE THE LIGHT
USE THE LIGHT
USE THE LIGHT
In Photography, the rule of thirds is a type of composition in which an image is divided evenly into thirds, both horizontally and vertically. The subject of the image is placed at the intersection of those dividing lines.
RULE OF THIRDS
EXAMPLE
RULE OF THIRDS

EXAMPLE
Leading lines are lines that appear in a photograph that have been framed and positioned by the photographer to draw the viewer’s eye toward a specific point of interest.
Night photography refers to the activity of capturing images outdoors at night, between dusk and dawn.
BUT
HOW?

In certain setting where you need to lower the shutter speed to allow enough light to reach the sensor you may find yourself in need of using a camera support called tripod.
NIGHT PHOTOGRAPHY

EXAMPLE
EYE LEVEL PHOTOGRAPHY

An eye level shot refers to when the level of your camera is placed at the same height as the eyes of the characters in your frame.
The horizon line, which separates the foreground from the sky, is an important element in many scenes. Photographers can use the horizon line to highlight certain aspects of an image, create impact, and compose a unique shot that is pleasing to the viewer.
HORIZON SHOT
EXAMPLE
EXTRA REQUIREMENTS

- Direction of light - front, side, backlight
- Quality of light - shade, sunlight and time of day
- Fill the frame
- Post production
PROJECT

- CD Cover
- Photo scrapbook page
- Collage
No matter how sophisticated the camera, the photographer is still the one that makes it.
D. Bartlow