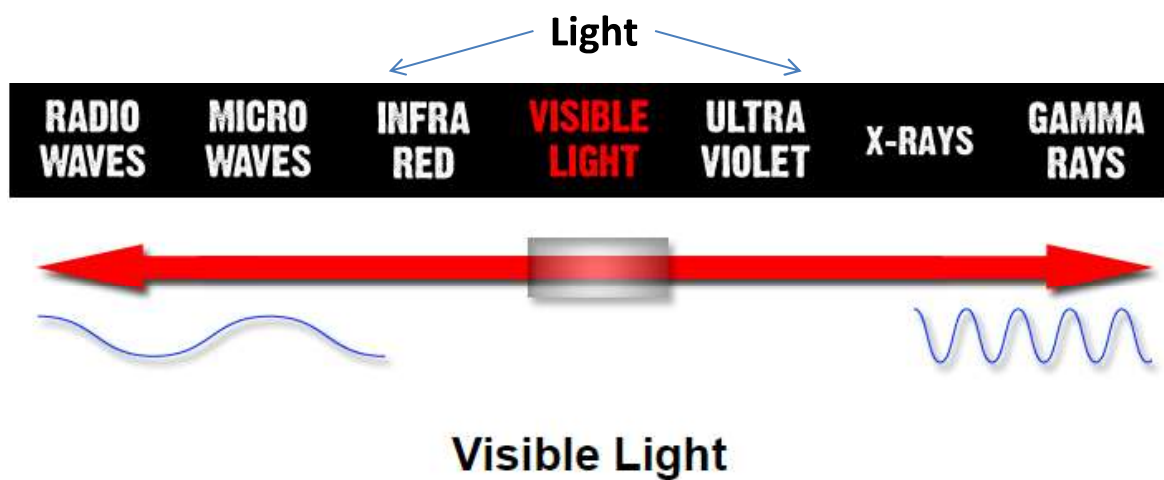


# HDR Photography

*High Dynamic Range*

*Where visible light fits  
on the  
Electromagnetic Spectrum*



# Visible Light

The Eye can see a brightness range of approximately	30 stops
The Eye at anyone time can see a range of about	10 stops
Scanners	10 stops
Display devices	10 stops
Cameras sensors on a bright day	12+ stops
Printed Media	10-14 stops

***Note: on cameras the dark end is limited by the electronic noise level***

***Note: most of the additional range of the human eye is in the shadows***

# Putting aside theoretical limits

The eye is very adaptable but we do not normally notice it. If it were not adaptable the eye and the camera snapshot would be the same. However,

- walk into a darkened cinema (from a bright foyer) showing a film
- driving into the sun, pull down the visor
- in a cathedral look at the stained glass backlit by the sun and into the dim light of a side altar

A photograph is a snapshot of light exposed at the judgement of the photographer (or the camera)

The image we aspire to is normally that of a roving eye

The image we get is that of a static eye

The images that follow use 3 different exposures of the same subject where the shutter speed is modified to give 2 or 3 stops different exposure.

# The sensor

The sensor used in modern cameras and phones have the capability to capture

*a wider contrast ratio than our eyes*

*The difference is predominantly in the shadows*

*If we want an image that includes those shadows that are outside of the contrast ratio of our eyes we must compress the shadow range.*

*This is a distortion of 'the truth' but more in keeping with what our brain assimilates from our roving eye*

*If this is done to an extreme then the image starts to look dull and lacks contrast*

# HDR set-up and implementation

As the idea is to merge 3 images with different exposures we need the depth of field to be constant. i.e. we want the aperture to remain unchanged but shutter speed will vary.

The camera needs the following settings

- exposure bracketing (+/- 2 or 3 stops)

- continuous (fast) shooting mode

- Or HDR mode

# HDR set-up and implementation

As the idea is to merge 3 images with different exposures we need the depth of field to be constant. i.e. we want the aperture to remain unchanged but shutter speed will vary.

The camera needs the following settings

- exposure bracketing (+/- 2 or 3 stops)

- continuous (fast) shooting mode

- Or HDR mode



# HDR from a single exposure in Raw

Raw is a capture of everything that is on the sensor but if viewed as recorded it would look mess

The camera's software or the editor s/w performs a translation to a credible image and then the Raw Editor is used to modify the image to the requirements of the photographer

HOWEVER

The above software does not use any of the captured information that is outside the 10 stop range

NOW

If we take this 10 stop range as a middle exposure and rename it as the 'mid' image

Now reload the original image and with the raw editor reduce the exposure by 3 stops save it and then rename it as 'under' image

Now reload the original again and this time increase the exposure by 3 stops, save it and rename it 'over' image

Now use the HDR software of choice as normal