

Back to Basics

Exposure and Depth of Field

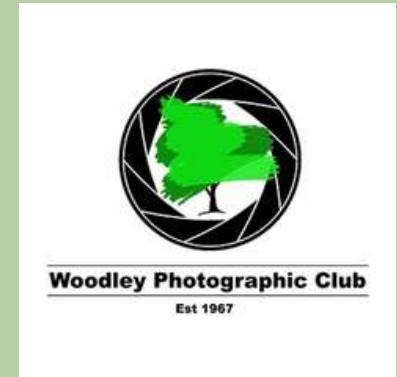
Woodley PC Members Evening
16 September 2019

Bob Collis



Woodley Photographic Club

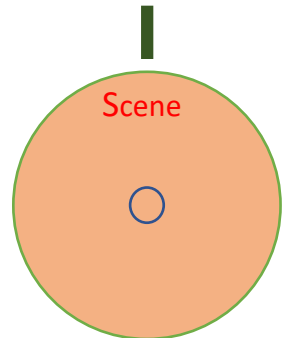
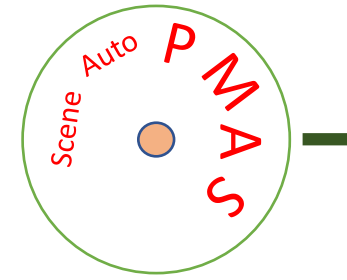
Est 1967



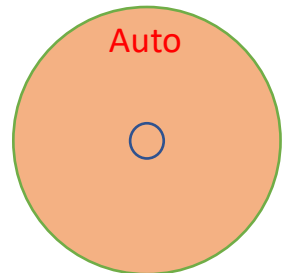
Correct
Exposure:

An exposure that achieves
the desired effect!

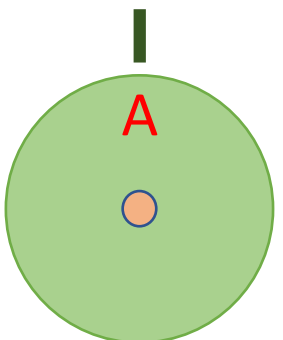
Taking Control of Exposure



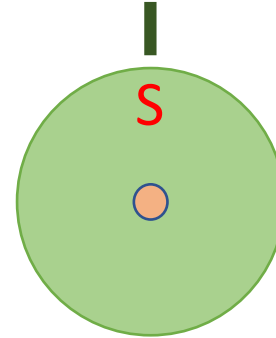
Camera uses factory pre-sets
User accepts camera-metered exposure



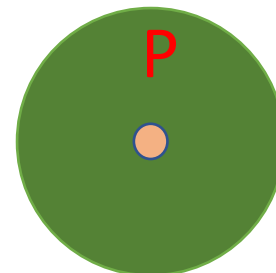
Camera sets all the exposure parameters
User accepts camera-metered exposure



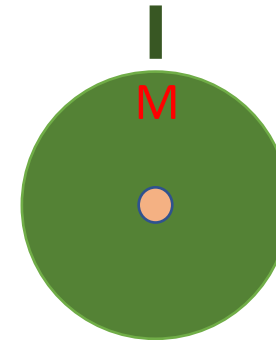
User sets ISO and Aperture
Camera adjusts Speed for 'acceptable' exposure



User sets ISO and Speed
Camera adjusts Aperture for 'acceptable' exposure

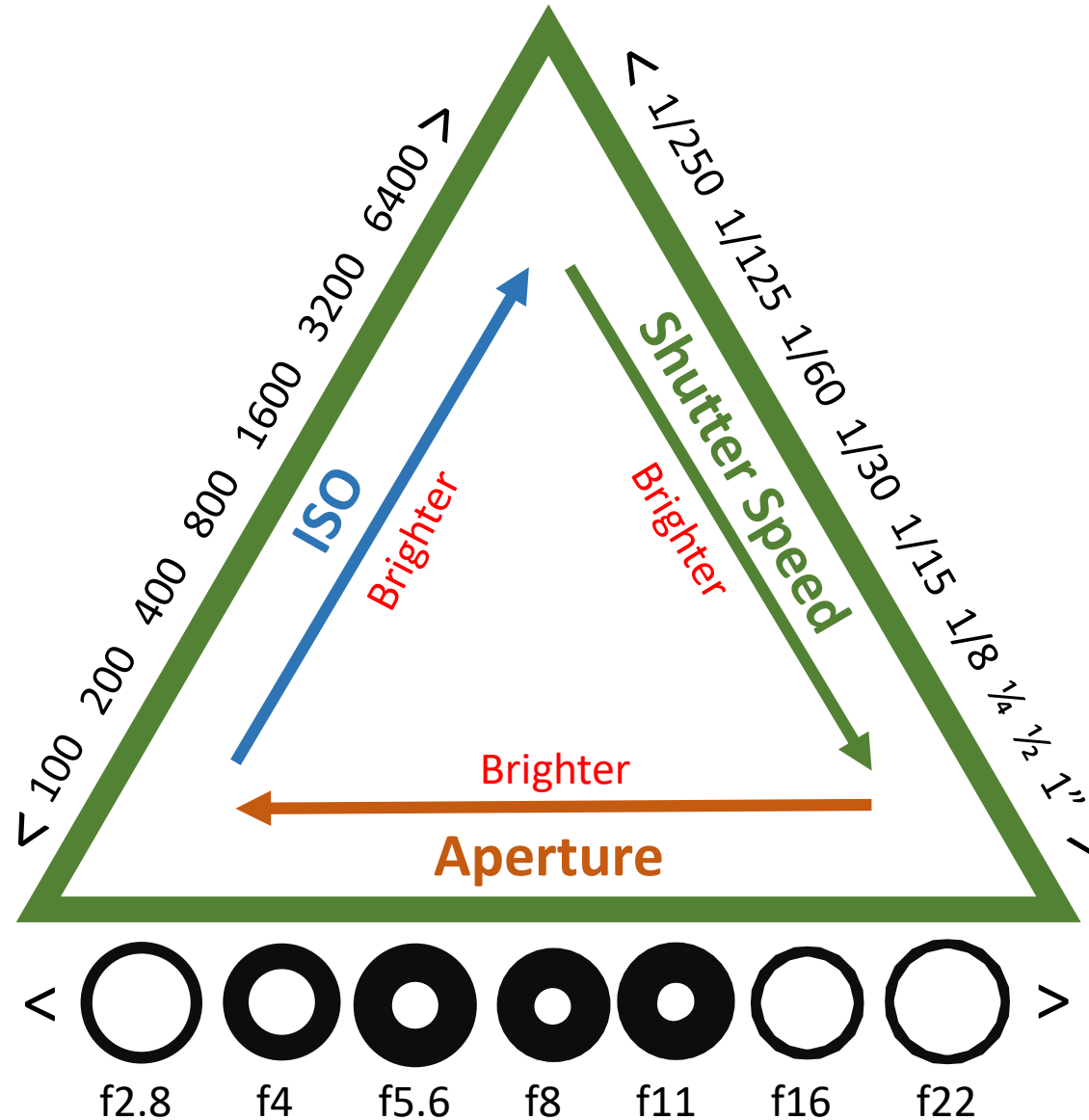


User sets desired setting, e.g. ISO
Camera adjusts the other settings



User sets ISO, Aperture and Speed for 'acceptable' exposure
Camera uses these settings for exposure

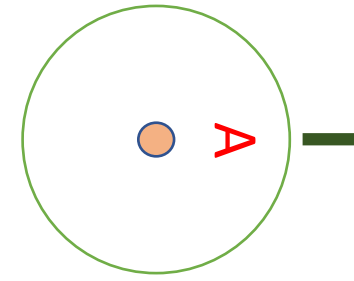
The Exposure Triangle



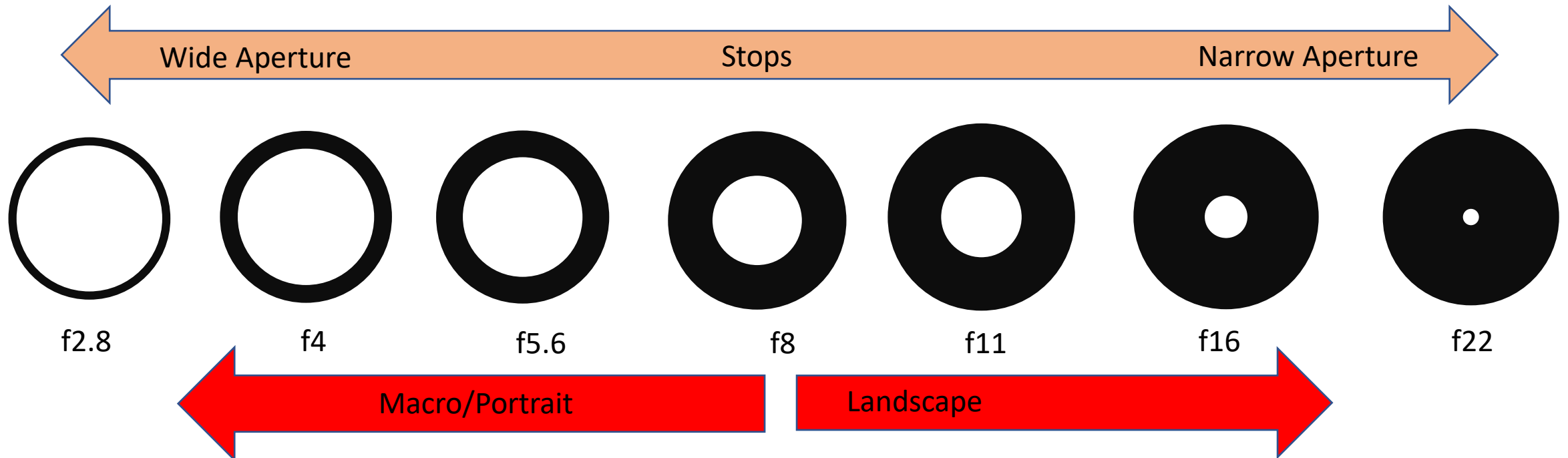
'Stops'

- The doubling or halving of the amount of light let into the camera
- Half stops and third stops have been introduced in many cameras

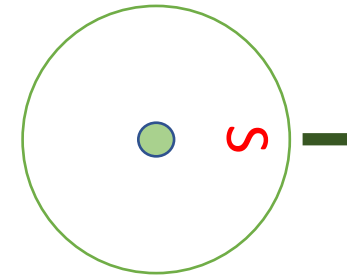
F-Stop (Aperture Priority)



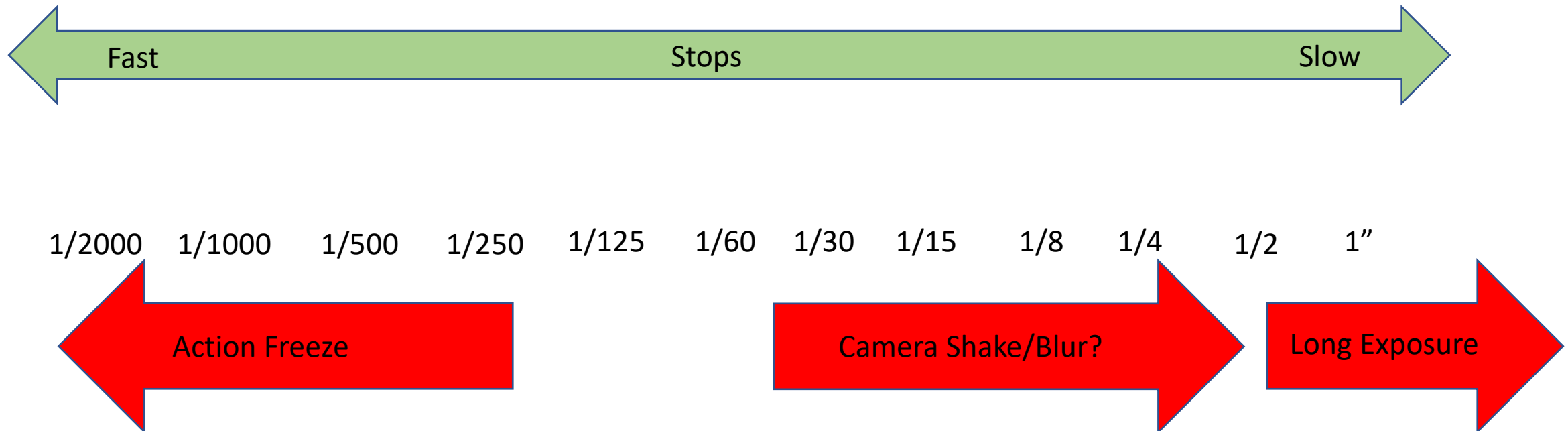
- The aperture is the hole in the lens that controls how much light enters the camera
- The aperture size affects the area of acceptable sharpness (the 'Depth of Field')



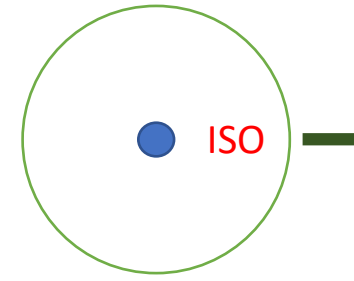
Speed (Shutter Priority)



- The shutter speed controls the length of time that light enters the camera
- The selected shutter speed can affect image sharpness and movement blur



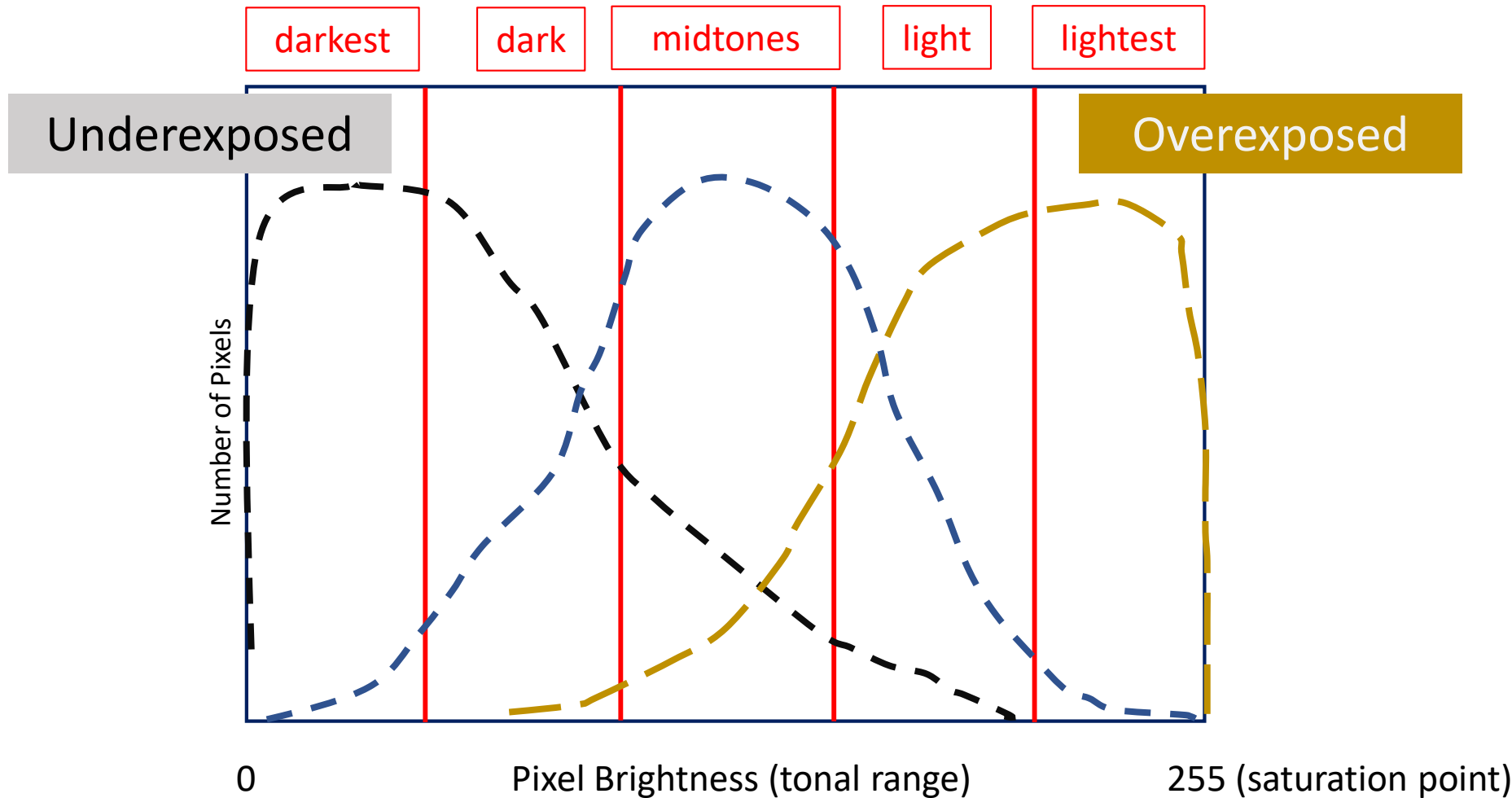
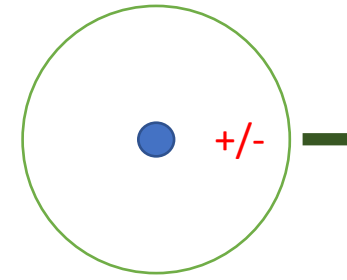
ISO (Camera Sensitivity)



- ISO controls how sensitive the camera is to light
- A higher ISO number can introduce more image noise



Exposure Histogram

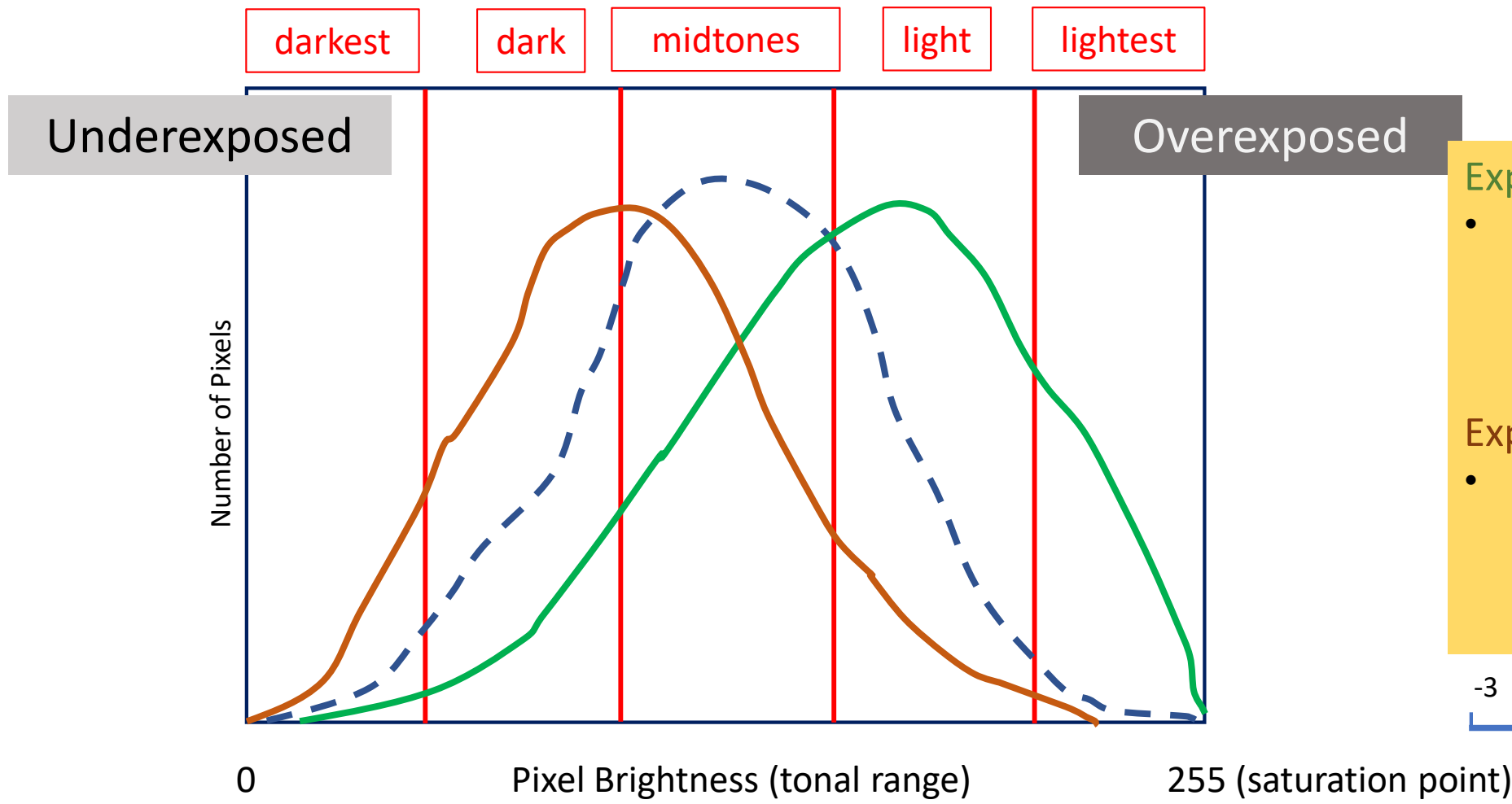
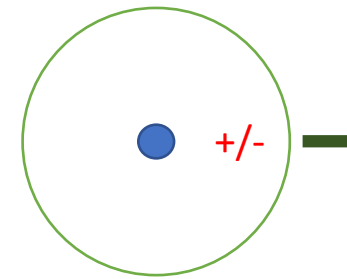


Exposure Compensation

- Makes the image darker or lighter
- Compensates for bright skies and dark interiors
- Creates backlit images and silhouettes
- Increases details in shadows

-3 -2 -1 0 +1 +2 +3

Exposure Histogram



Expose To The Right

- Minimises image noise/maximises capture of lighter tones

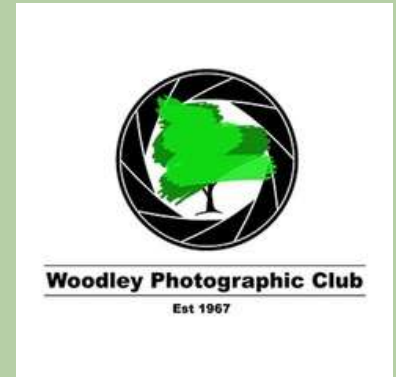
Expose To The Left

- Preserves detail in the highlights/requires less light



Depth of Field

The distance between the closest and furthest objects in the photo that appears acceptably sharp



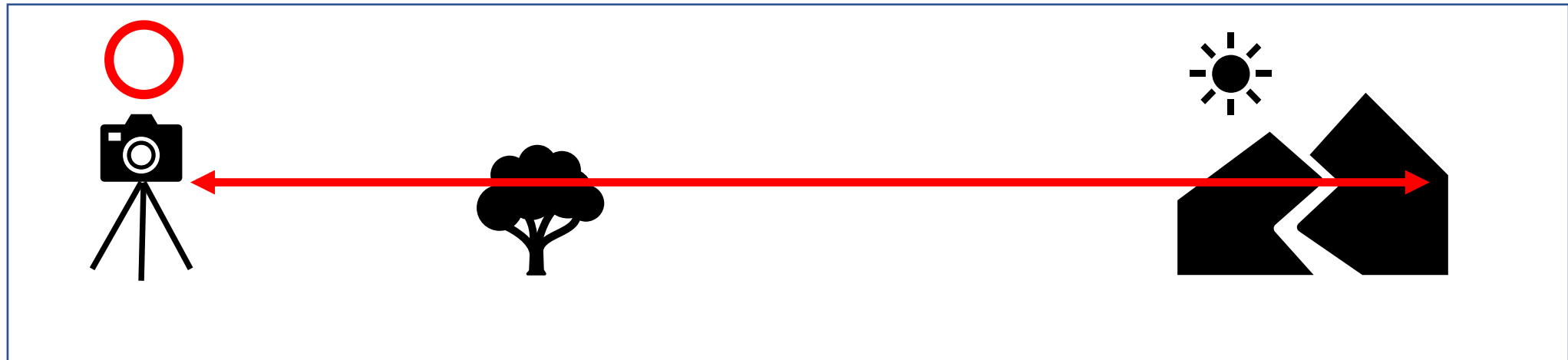
Depth of Field - Landscapes

- **Influenced by:**

- Aperture
- Focal length of lens
- Sensor size
- Camera-subject distance

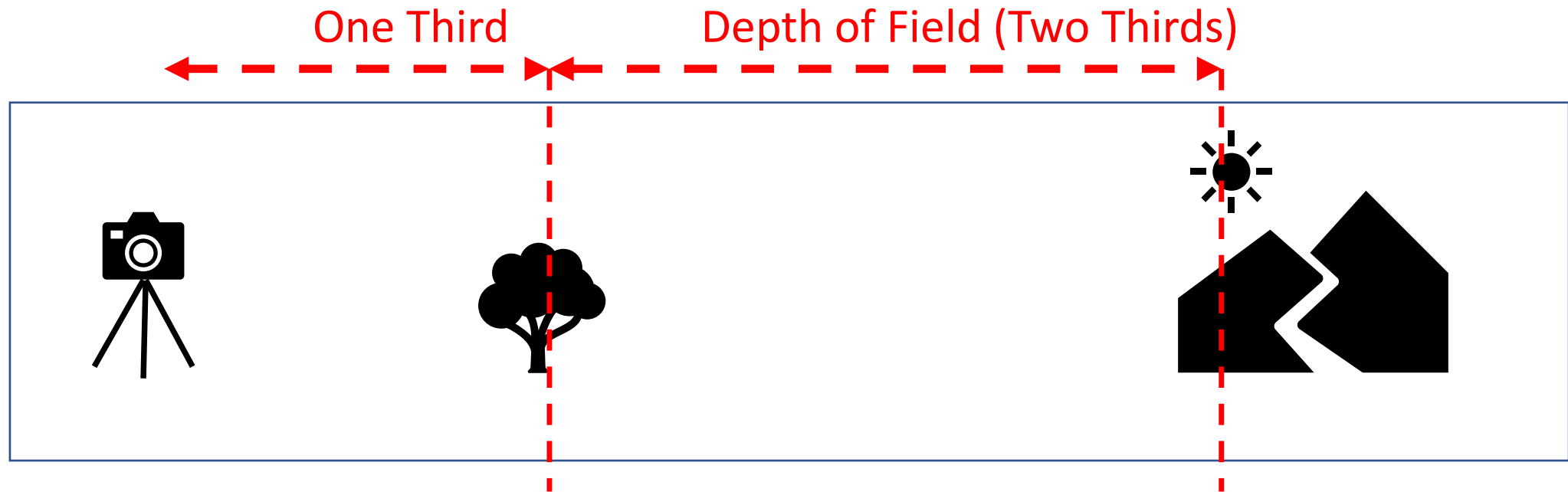
To Eliminate Camera Shake:

- Use Tripod/Turn Off Stabilisation
- Use Cable Release
- Lock-Up Mirror/Use Mirrorless
- Use Liveview
- Check Image on Camera Screen



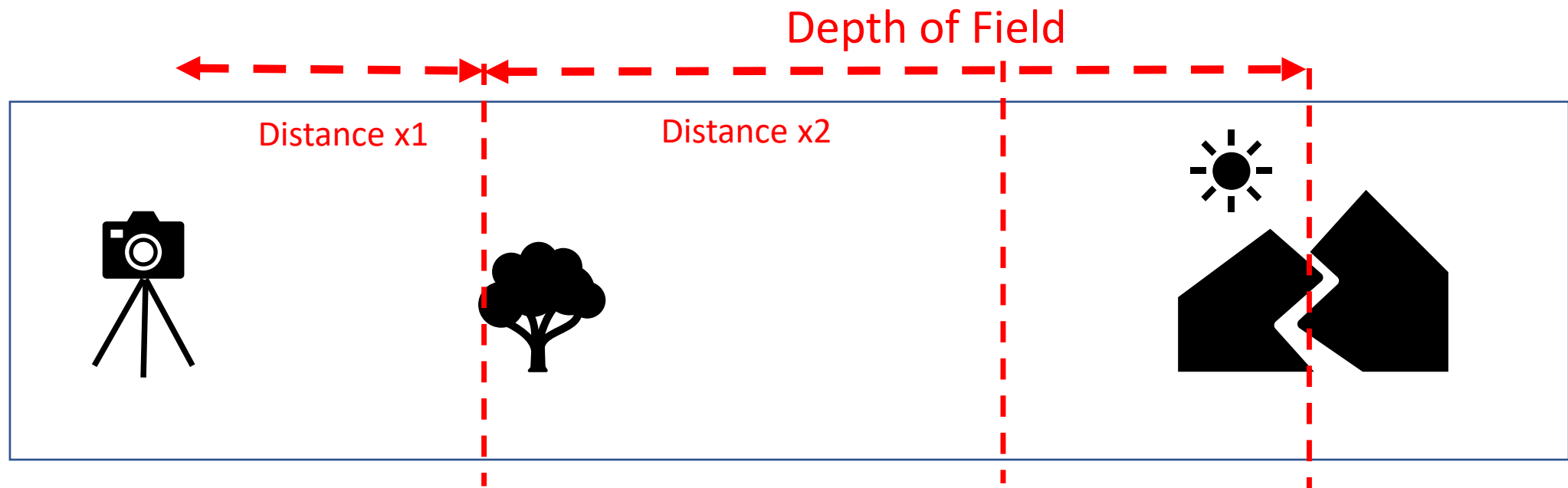
Rule of a Third Focusing

- Set the aperture at f8+
- Use either auto or manual focus
- Focus **one third** into the scene



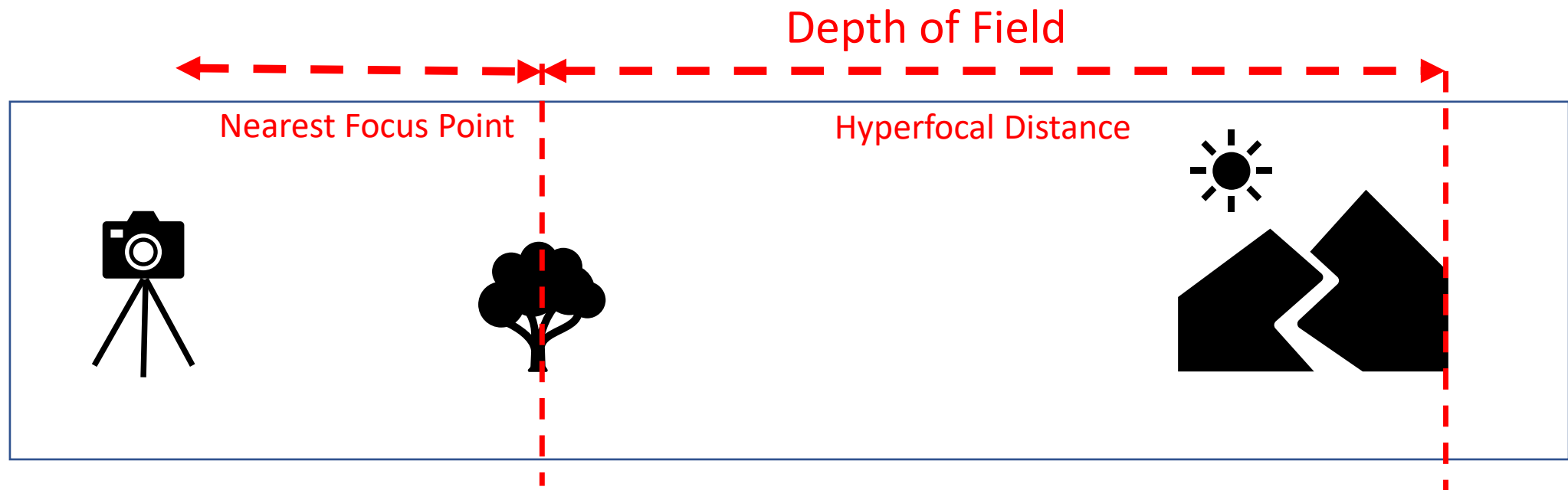
Double Distance Focusing

- Identify nearest point in the scene to be sharp
- Focus on a point in the scene at **double the distance** from that point



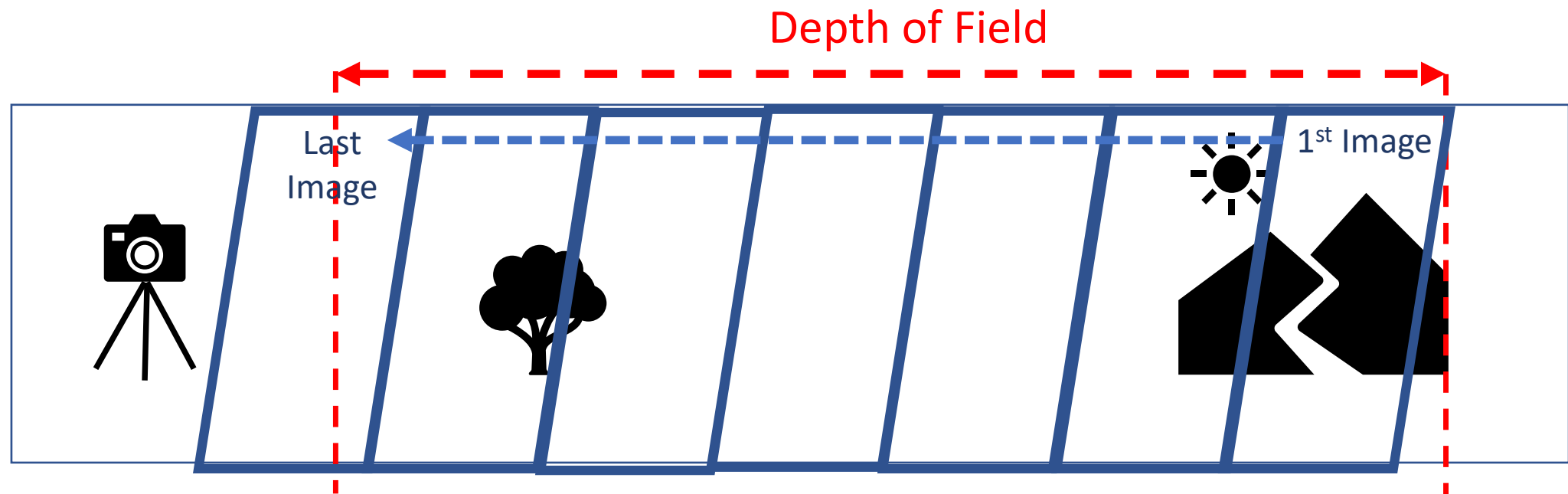
Hyperfocal Distance

- Select aperture and identify nearest focus point
- Use pre-determined charts (apps) to find HD for that aperture
- Focus at the **hyperfocal distance point** stated



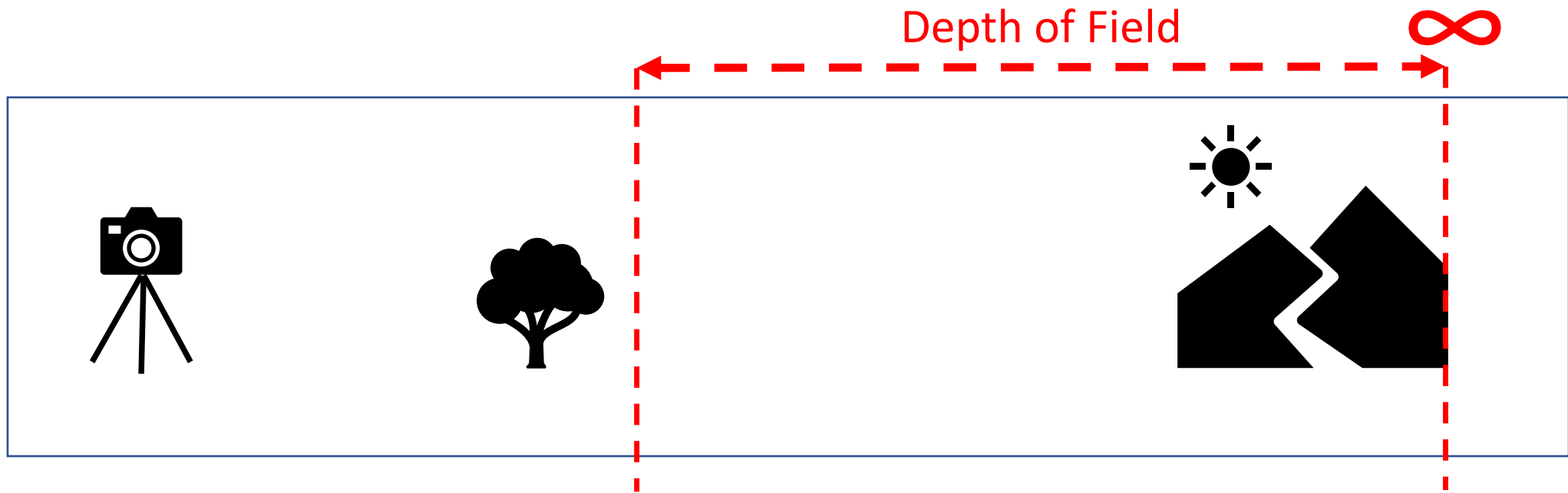
Focus Stacking

- Take several images at different focus points regular at intervals in the scene
- Work from light to dark (far to near)
- **Stack** or blend photos using image-processing software



Infinity and Beyond!

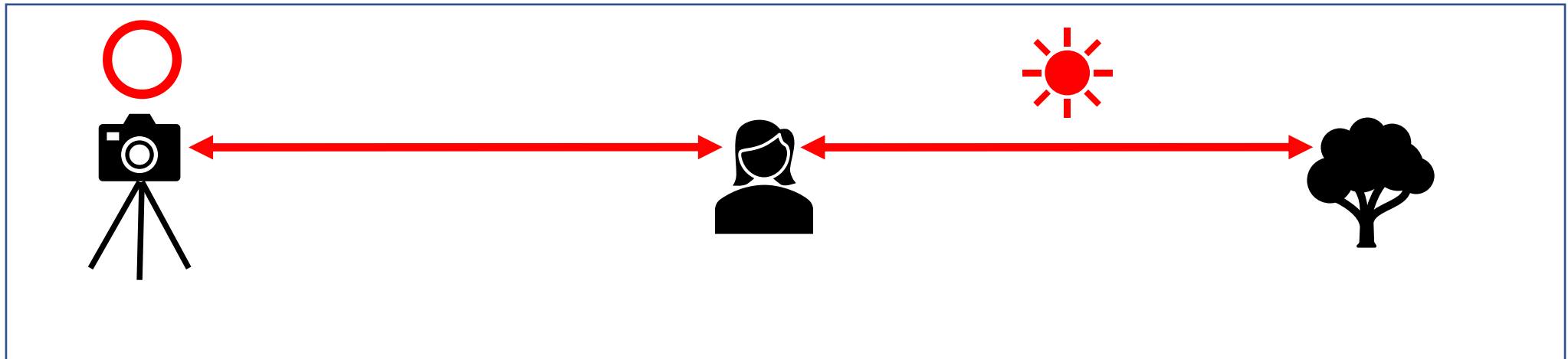
- Set a narrow aperture (above f13 can sometimes produce distortion and defraction)
- Set focus to infinity



Portraits

- **Influenced by:**

- Aperture
- Camera-Subject Distance
- Subject-Background Distance
- Lighting

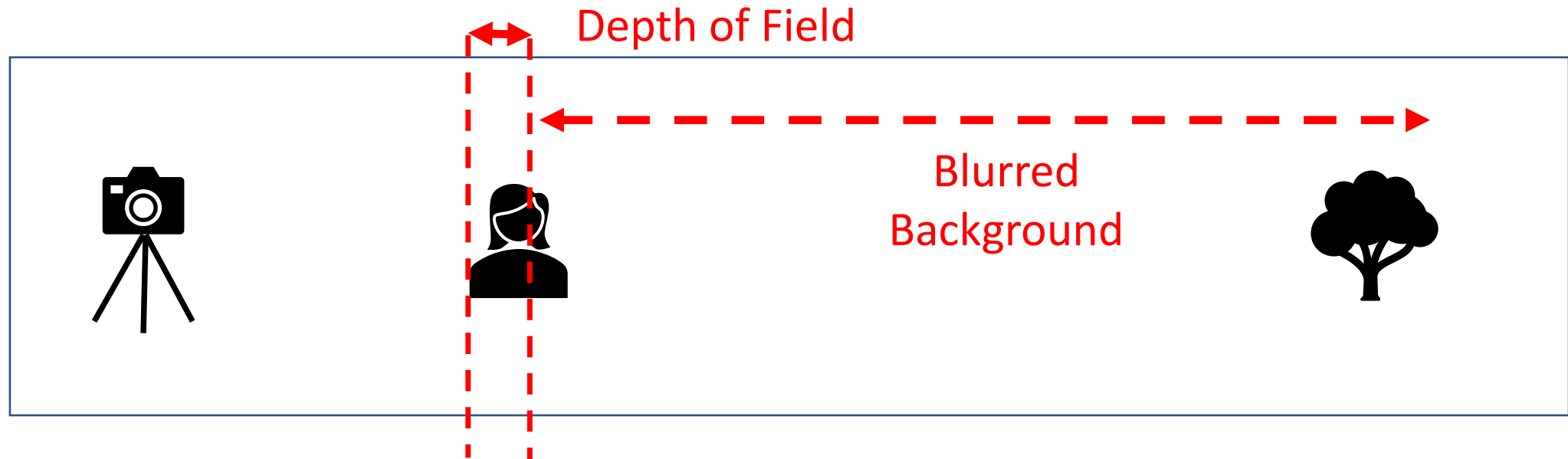


Shallow Depth of Field

- **Focusing Context:**

- Sharp Eyes and Features
- Background Blur
- Light Subject

Using Wider Apertures

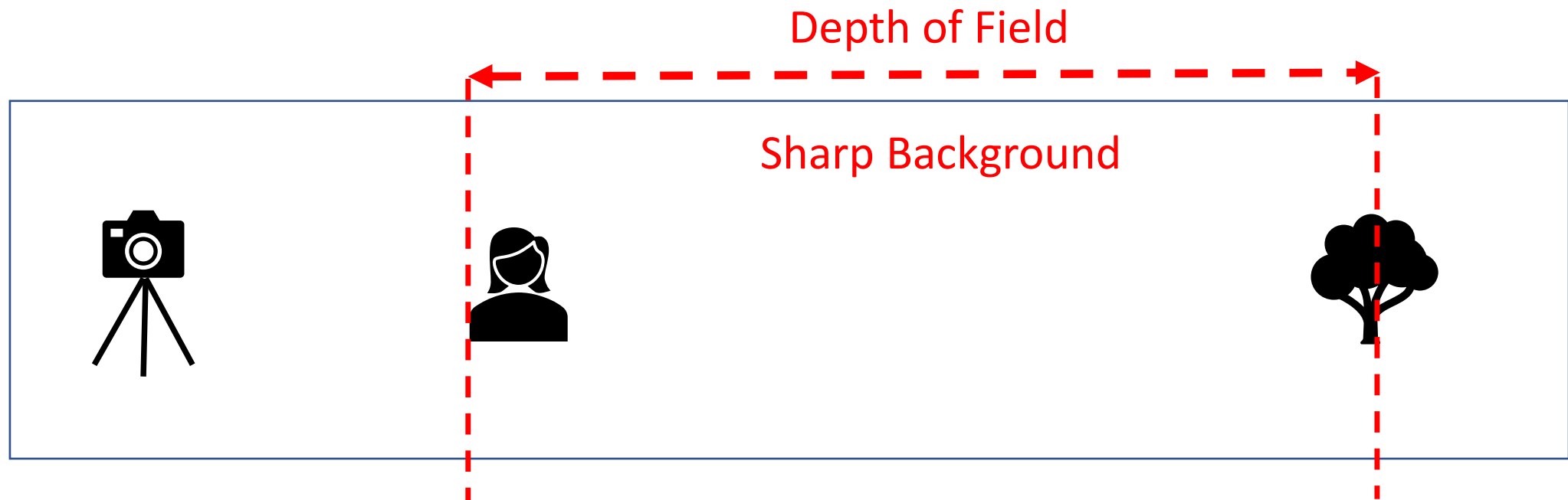


Long Depth of Field

- **Focusing Context:**

- Eyes and Features
- Background Sharp
- Light Subject and Scene

Using Narrower Apertures



Affect of Sensor Size

- Sensor size affects depth of field
- 'Cropped Sensors' have greater depth of field

Sensor	Size	Crop Factor	Physical Focal Length	Effective Focal Length	Aperture	DOF
Full Frame	36 x 24	1.0	120mm	120mm	f9	0.90 metres
APS-C	22 x 15	1.5	120mm	180mm	f9	1.42 metres
Micro 4/3	18 x 13.5	2.0	120mm	240mm	f9	1.91 metres

Camera-subject distance = 5 metres

Affect of Lenses

- Lens type affects depth of field
- Zoom lenses - adjustable focal length
- Prime lenses - fixed at one focal length

Lens Type	Focal Length	Depth of Field	Good For....
Wide Angle	Short	Deep	Peripheral details
Standard	Medium	Deep/Medium	Getting close
Telephoto	Long	Shallow	Compressing depth of field
Prime	Fixed	Medium/Shallow	Shallow depth of field
Macro	Fixed	Shallow	Getting closer