Learner Hour – FOCUSING AND IMAGE SHARPNESS

Image sharpness is probably the most important aspect of photography. If your photo is not sharp for any reason, there is very little you can do in PS to recover it. Exposure can be recovered up to a point, but you can't recover an image that is blurred.

Of course there are instances where you are deliberately aiming for blur in your image, but even then, knowing how to control focus (and other settings) in your camera is important to achieve the effect you are after.

Focus and Image sharpness are not quite the same thing. Image sharpness requires correct focus, but includes other factors. An image can be in focus (or part of it), but still appear 'soft' or blurred.

Factors affecting Image sharpness and choice of settings (within camera) –

1. Movement of the subject (controlled by both Focus settings and shutter speed)
2. Movement of the Camera (Controlled via exposure settings & Image stabilisation)
3. Focus (controlled via Focus mode & Focus area)
4. Depth of field – the area of your image that is in focus (controlled by exposure settings)
5. Image quality (controlled via Sensor quality & sensitivity and other factors e.g. lens quality) This will also limit the degree to which you can sensibly crop (zoom in) your photos, without introducing softness/artifacts.

Items 1-4 can be controlled by you through correct use of your camera. Item 5 is more to do with how much you are prepared to spend. Largely there is a correlation between cost of hardware (camera and lens) and Image quality obtainable, but you don't have to spend a fortune to obtain perfectly acceptable images, provided you control items 1-4.

In this session I'm going to concentrate on FOCUS settings. However, to briefly explain the exposure settings that can affect image sharpness (we can have another session on these matters) –

1. Moving subject - You need to consider what shutter speed will give you the effect you want – fast shutter speed to freeze the subject, slower to give movement/blur.
2. Camera movement /shake – Generally this is not what you would want. To avoid this (for hand held photography) you need to ensure your shutter speed is fast enough to avoid showing any movement of the camera. This usually involves adjusting aperture/ISO to enable your shutter speed to be fast enough to avoid the effect of any camera movement. Make sure you have any image stabilisation (in camera/lens) turned on.
   As a general rule (although this can be pushed with modern Image stabilisation or very steady hands), you ensure your Shutter speed is at least set to 1/Lens focal length you are shooting at e.g. If your lens focal length is set at 50mm your shutter speed should be at least $1/50^{th}$ sec., 200mm – $1/200^{th}$ sec etc.
   Use of a Tripod negates much of above.
3. Depth of field – This is the area of your image that is in Focus and is determined by the Aperture you use. A larger aperture (smaller number) gives a more narrow DoF, a smaller aperture (bigger number), a wider DoF.
   You often have to compromise between DoF and shutter speed and ISO if lighting conditions are dull. Remember a blurred image subject cannot be recovered, so preference should be

given to ensuring your shutter speed is suitable to freeze the area you are focusing on. It is possible to sort of 'simulate' DoF in PS and reduce noise (limited) created by higher ISO, but no amount of sharpening can recover a blurred subject.

FOCUS SETTINGS

Choosing your focus settings is determined by the subject matter you are taking.

Sport and action photos would generally require different settings to landscape, Still-life or macro and Wildlife could be anything between the two extremes depending on what it is you are photographing.

Your camera will probably have two groups of settings to control how your Focus will work –

1. FOCUS MODE – This is how your Camera will carry out it's focusing (AF single, AF continuous and Manual. Some cameras have hybrids of these options).
2. FOCUS AREA – This is the area of the sensor that will be used by the camera to determine what to focus on when the Focus Mode is set to an AF setting (Zone, Wide, Centre, Spot and Lock-On capability). Some cameras have other options that are slight variations of these Areas.

NOTE – AF is 'Auto Focus' where the Camera controls the Focus (unlike Manual focus).
AE is 'Auto Exposure' where the camera determines all or some element of exposure.

FOCUS MODES

a) AF Single – In this mode your camera focuses using the 'FOCUS AREA' you have set. This happens when you press the 'focus button' (usually the shutter button half-way, but can be set on modern cameras to another button). That focus is then 'locked' until you press the button again. This allows you to focus then recompose before fully pressing and taking the picture, but be aware this usually locks the AE also which may not be what you want (there are ways around this, using a separate button for focusing (back button focus) is one way). This is generally a default setting when you unpack your camera.
When your camera determines it has obtained focus, it will indicate this on the screen in some way and/or as a beep.
USE - You would use this setting for anything where there is no or very slow movement in your subject e.g. Landscapes, Still life. It tends to focus marginally more rapidly than other AF settings.
b) AF Continuous – In this mode your camera is constantly focusing on the 'Focus Area' you have set, WHILST you hold the 'focus button' down (usually shutter button half-way).
If you primarily shoot action photos, whether it be animals, sport or people moving, you may choose this as your default Focus mode.
When your camera determines it has obtained focus, it will indicate this on the screen in some way and/or as a beep (it may not beep in this mode).
USE – For any subject that is moving.

NOTES -

i. Because the default button is usually the shutter button and Focus is done when half pressed, in order to keep your camera constantly focusing you have to hold your finger half way on the shutter button. It can prove difficult, for moving subjects, to avoid fully pressing the shutter and taking the picture when you didn't mean to. This is partly why many people programme a different button on the camera to manage focusing, leaving the shutter button to only handle the exposure (In AE settings) and taking the picture. This is referred to as 'Back button focussing' – more on this later and/or in another session.

ii. This mode is more demanding on your battery life as it is constantly attempting to focus.

iii. As a default in this mode, AE usually is not locked by half depression of the shutter, it is set on full depression.

c) MANUAL Focus – This is where you take control of the focusing. The Camera will not attempt to focus. You focus by using the focusing ring on the lens and selecting the point in the image that you want to be in focus.

Once you are happy with the focus, you press the shutter button to activate any AE setting you have and take the picture.

Focus remains at the distance the lens ring was set at, till you move the focusing ring again, so if you or the subject move you need to refocus manually.

Usually there are options that can be set in the Camera menu to 'assist' your focussing e.g. auto zoom in, focus indicators etc. – see your manual for specific info.

USE – In some situations AF doesn't work well e.g. low light, shooting through windows / fences etc. In these situations, MF may be the only option.

It is often used for Macro work because of the very limited DoF on Macro lenses and the necessity to get it absolutely spot on a very small part of the subject.

Also, if using a Tripod many people always use MF because they have time and regardless of other settings, it is 'locked' at the focus point you have determined (unless you knock/move the focusing ring!). Note – There are other methods of locking focus e.g. Back button focusing and Focus lock buttons.

As mentioned, some Cameras have other Focus modes that are combinations/hybrids of the above. See your Camera manual for further info.

<u>FOCUS AREAS</u>

Note these are all AF areas and are not used when in Manual Focus.
Also note you need to check in your camera manual, how AE operates with the different focusing areas, particularly when re-composing. Normally AE is taken at the point you fully press the shutter, which may not be what you want. There are ways around this (subject for another day).

a) WIDE – In this 'Area', the camera uses the whole width of the available points on the sensor to focus on. It will generally give preference to closer and/or larger objects within the frame as the focusing point within the 'wide area'. However, you have limited control over what the camera focuses on and often have to move the camera to refocus for a given subject.
It can be useful for Landscapes and in 'Tracking', but be aware that you have limited control over what it focuses on.
When it has found focus the camera normally highlights with a 'box', the area it has in focus.
b) ZONE – This is similar to Wide except that the area is split into 'zones' and you can select the 'zone' that you want the camera to focus in.

I personally find this option limited as it takes time to select a zone and there are alternative options to achieve the same thing. I can't see where I would use this, but some people do for example where they know their subject is coming into shot from a particular position, they pre-compose and snap when the subject enters the zone – I would use other methods where I can be more sure of focusing on the subject.

c) CENTRE – The focus area is a relatively small area in the centre of the view so you know what you are focusing on (unless very small).
You can focus on your subject and then move the camera to get your composition.

d) SPOT – The Camera focuses on a 'spot' in the scene. By default this will be central and smaller than CENTRE AREA option, but many cameras allow you to adjust the size and location of the 'Spot' from small to big(ger).
Again, you can either move the spot to a desired location for composition or Focus and then move camera to get composition.

e) LOCK-ON AF – This can be set for all the above areas (in many cameras). It only works when in CONTINUOUS AF.
Once you have obtained focus, keeping your finger on the Focus button, the camera will then 'track' the subject you have focused on, keeping it in focus as it moves. When you are ready, press the button to take the picture.
You need to be aware of how well your camera 'tracks' and the area of the sensor it is capable of tracking within as some cameras are better than others. All cameras will struggle more to track in low light conditions.
You also need to check how AE operates in this focusing method for your camera as the subject may well be moving from light to dark etc. This is especially true if you are combining this with 'Continuous shooting' where you are tracking and taking constant pictures – sometimes exposure is locked at whatever the first picture was taken at, but some cameras allow you to override this and auto adjust to the variable lighting conditions.
This method is generally used for action photography, where something is moving around, as once you have locked on to your subject, the focus point follows it. This is also where some people reckon WIDE AREA LOCK-ON is best to give you the best chance of 'locking-on' to the moving subject. I have limited experience of 'tracking', but have found CENTRE and a larger SPOT (or Expand flexible spot) is more reliable in locking on to the subject, especially if it's a busy scene and once locked-on, you can move the camera position to recompose if required, without losing focus.
This is also where Back Button Focusing comes into it's own as you remove the Focus job from the shutter button, so don't have to lock on after each picture/burst (after releasing the shutter button), just keep holding the 'Back button'.
LOCK-ON / Tracking is almost a subject in it's own right for settings (AF & AE) and different Cameras offer differing levels of functionality for it's use. I can't comment on makes I don't use, but I can say the Sony Alpha series, esp. Mark 3s and the A9, are excellent and offer options that other cameras currently don't e.g. EYE AF, that actually locks on someone's eye as a focus point!

The ability to change as quickly as possible between different focusing methods is important when you are out and about doing photography. Something can happen quickly and unless you are comfortable getting focus quickly, you may well miss that 'Killer' photo.
If your camera can have buttons programmed, it's a good idea to programme one to Focus Area and one to Focus Mode to enable you to change without entering the menu system.

If your camera has memory settings on the dials, set one up for say Landscape and another for Action (or whatever different styles you most use).
Better still (as well), if you have a Sony Mk3 or A9 camera, set a button up for 'instant capture', where a press of that button auto switches you camera into whatever settings you have pre-defined to that button (Focus, exposure, ISO, drive mode settings), for the duration you hold that button, then reverts back when you let go. (I'm not trying to sell Sony … they just happen to be the best!!)

The key to all this is GET TO KNOW your camera, what buttons do what and what it is capable of. In my opinion this is the most important thing to do. You may well have a camera with limited functionality, but if you know very quickly what buttons and levers to use in different circumstances, you are far more likely to get that picture well exposed and focused, than someone with an all singing camera who doesn't know how to change settings quickly or understand what they do.

At the end of the day it's practice and familiarity. Use YouTube, there are thousands of good (and not so good) videos on how to set your specific camera up, just be aware people have different views, so watch a few and then make your own mind up depending on your own style and type of photography.
Try settings out at home, you don't have to go out to get some familiarity with your camera, although 'real life' shooting is the best way to learn what works and what doesn't.

Don't be daunted by all the options. At the end of the day, most people probably only use a couple of different focus methods 90% of the time, but it's always good to know what is possible for that other 10% and where to set it.