

Photographing things that move



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AAPS, CAPS/s

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2022

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Photographing things that move



Alan Bennett

This is a workshop
where you do some
of the work so bring
a camera: any
standard lens (zoom
or prime) will do

AGENDA

What is a good image?

My take - SLAB EGS

Camera & lens settings

Panning

Specific subjects

Ideas

If all else fails

Learning to photograph movement

Workshop practice (during T break)

Q&A

Homework

Photographing
things that
move



Introduction

Disclaimer - this presentation contains my photographs (except 1), my thoughts and ideas many of which have been field tested with members of this club – but my opinions may not be right (shock, horror), or right for you. This is a broad subject so I have tried to cover something for everyone, I hope you get something from it.

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Participate

Take photos of any slides you wish

Copies of the slides with additional notes will be available on the WCC website. Homework will be assigned to you!

Ask questions at any time or at the end

Have a go at the optional exercises (during the talk or at the T break)

Happy for you to clap, cheer or nod... to help me understand if I am making any sense to you

Participate

My biases



Mirrorless Nikon gear (currently) plus 1 DSLR lens

Favourite genres – birds in flight and trying to photograph my grandson

Hours taking photos

Minutes post processing (typically 3-5 layers in Photoshop in < 5 minutes)

I don't read my slides so if I don't make sense, or use terms you are not familiar with, just ask me as we go, or at the end

Movement - the smash cake



Nikon Z7
50mm @ f/5.6
ISO 400
1/60th
Bounce flash
Matrix metering

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Speaking of my biases – here's my grandson at his 1st birthday party, playing up to the audience with a 'smash cake' – designed for destruction

Subject had restricted movement (ie in a high chair) but that didn't stop him moving

Movement – a change in position



Slow, fast,
predictable,
unpredictable,
random,
expected,
unexpected?
How do you
prepare for all
that?



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Fun fact – a bird flying at 25km/hr travels 420m per minute or 7m per second – hence a fast shutter speed is required for a bird flying directly to you (or away)

All 4 images taken a few minutes apart – the ability to change settings quickly meant I was able to get a wide variety of images without moving

Shutter Speed

How fast or slow should you go? What effect do you want?



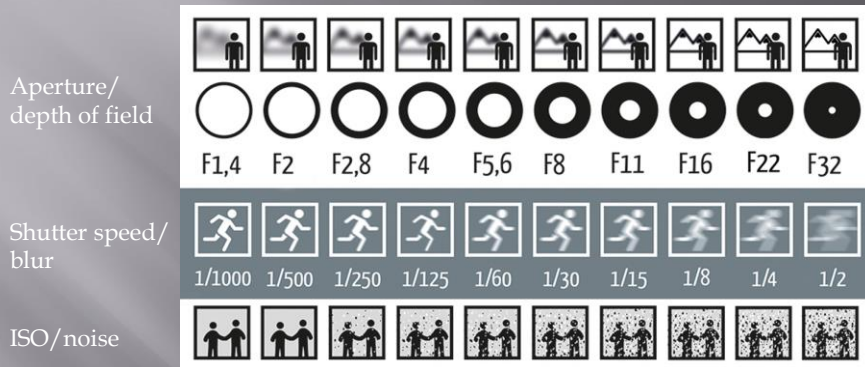
1/10th

1/1,250th

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Both images taken on a tripod at different shutter speeds then combined in Photoshop

How well do you know your camera? 3 core settings:



914pp

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Check if anyone needs help understanding these terms – these are the 3 fundamental camera settings used to control exposure

Some manuals are getting very large eg Nikon Z9 reference pdf manual v1 is 914 pages, plus the firmware 2.0 supplementary manual 98 pages

Did you know cameras have firmware that is occasionally updated to provide new functionality and to fix bugs?

The exposure triangle

DoF

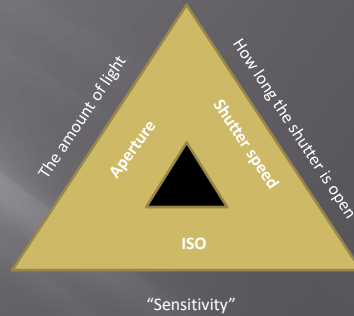
Aperture - the size of the opening in the lens

Blur

Shutter speed - how long the shutter stays open

Quality

ISO - how sensitive the camera is to light



The better the exposure the less time spent in post processing

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“sensitivity” – the sensitivity of the sensor does not actually change, ISO amplifies the light so that less is required to get a properly exposed image; analogy – stereo amplifier increases the volume **and** distortion

Starting exercises

Turn your camera on, set it to :

- ISO 500
- 1/500th of a second shutter speed, and
- f/5.6 aperture

Now bring your camera up to your eye and focus on a subject (any subject) – and keep it there

Starting exercises

Without taking your camera away from your eye!

Change the:

- ISO;
- Shutter speed; and
- Aperture

to any other settings – in 15 seconds

Award yourself a point for each change successfully made

How easy is that?!

Starting exercises

Now, put your camera back up to your eye ...

and hold it there...

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Check if anyone got 3 or 4 points

Starting exercises

Without taking your camera away from your eye!

Change the settings back to :

- ISO 500
- 1/500th
- f/5.6

For a bonus point, change the exposure compensation by +1 stop

Award yourself a point for each change successfully made

How easy is that?!

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Check if anyone got 3 or 4 points

What is a good image?

What do judges want?

That's the \$64,000 question

In my experience...



Canon 1DX Mk II, 100-400mm Canon lens @ 100mm, ISO 100, f/22, 1/60th second, hand held; taken on September 9, 2017 at Phillip Island

Judging results:

1. November 2017 WCC open EDI: no award ☹
2. Yea print competition November 2017: 14/15 points (5 + 5 + 4 = third place) ☺
3. February 2018 WCC open print: highly commended; image of the month ☺
4. Warragul National competition EDI: 22/4/2018: 10/15 points (5 + 3 + 2) ☺☹

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NB borrowed gear from Canon Collective, ie I had not used this camera or lens before

If someone says that camera takes great images, tell them that it does – and that you taught it all it knows

Not another ...



"If you are going to submit a photo of a pelican (Opera House, MCG, Flinders Street Station, etc), it had better be a very good one..."

"Show me something new..."

With that in mind, what is a formula or process for deciding what a good moving subject image is? ... I'm glad you asked

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Some clubs have banned certain images eg pelicans

Judges are likely to have seen many images of common subjects, buildings, landmarks, etc

Don't follow likes/social media comments if you want to improve your camera club style of images

Who are you creating images for? The judge? Yourself? Another purpose?

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SLAB EGS

My take on a good image

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SLAB EGS

Subject
Lighting
Action
Background

Experience
Gear
Skill

SLAB EGS

Subject – interesting, “different”

Lighting – that highlights the subject

Action – doing something interesting

Background/foreground – non-distracting

Experience – muscle memory, understanding your gear

Gear – fit for purpose

Skill – camera settings, camera craft, subject knowledge

Subjects

What makes an interesting subject?

“Beauty is in the eye of the beholder” Margaret
Hungerford, 1878

It's personal, people can have very different
tastes, often great images have a strong emotional
impact to a wide variety of people

SLAB? You decide



Nikon D500, ISO 900,
f/8, 1/2,500th; -1 stop
exposure
compensation;
500mm lens with 1.4
converter (EFL
1,050mm), burst
mode (10fps)

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One of my favourite images this year – note the EFL, hand held; manual exposure with auto ISO, -1 exposure compensation

EFL = effective focal length, ie on a Nikon crop sensor camera such as the D500, the EFL is focal length x 1.5 hence for a 500mm lens on this camera the EFL is increased by 50% to 750mm

SLAB? You decide



Nikon D850
ISO 250,
f/4, 1/400th ;
85mm f/1.8
Sigma ART lens;
burst mode
(7fps)

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Background slightly blurred but not clean, eye sharp, some movement in the wings and tail

Even though it's common for photographers to not be able to define what a good image should comprise, typically they can tell what a good image looks like when they see one

Lighting

Understand different types of light eg

- Front, side, back (rim lighting), above
- Daylight, golden hour, blue hour, middle of the day
- Harsh light – distant source eg the sun
- Soft light – close source, multiple directions (reflections), reduces contrast, suppresses texture
- Diffused - scattered, broader, softer
- Clouds – act as diffusers, evening out the light

Homework – try photographing an egg (oval), a balloon (round), a football (extended oval) in different lighting conditions

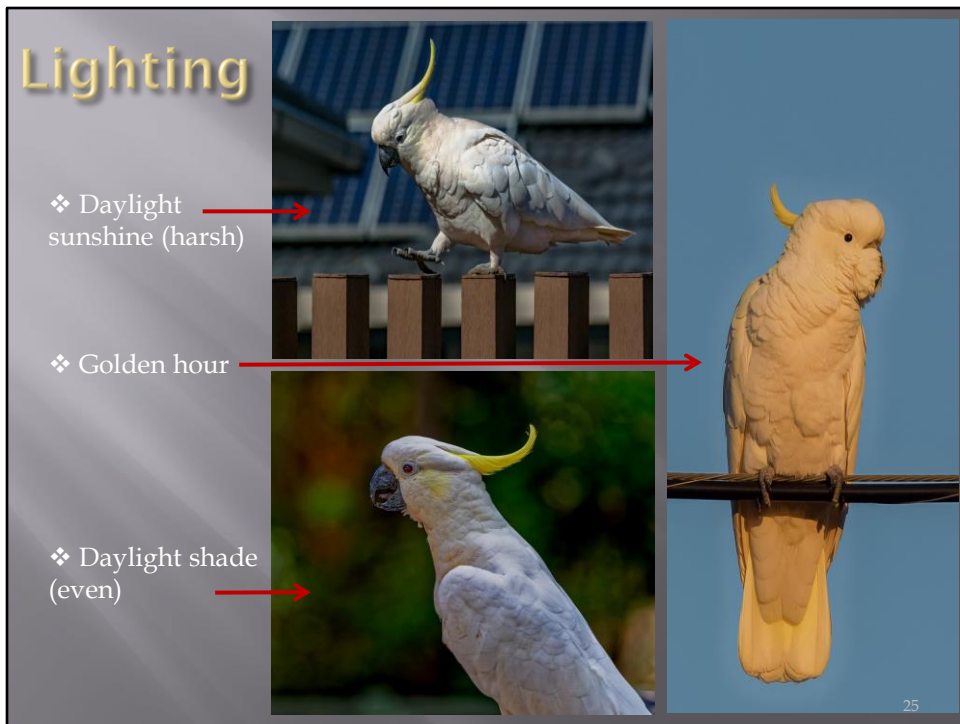
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Light strikes curved objects in an uneven way so try photographing different objects and note how light is being reflected from the different areas of

Sample reference #1:

<https://www.format.com/magazine/resources/photography/lighting-in-photography>
the object

#2: <https://www.diyphotography.net/for-an-in-home-photography-challenge-that-can-keep-you-busy-for-hours-try-egg-2-0/>



The point of the slide is to give an example of the differing effects of 3 types of light, from the cold effect of full daylight through to the softer and warmer tones of golden hour

Golden hour provides soft, even lighting

White birds are hard to expose for

Lighting @ high ISO (5,000)



In shade
Eastern Yellow Robin



Flat, overcast lighting
White-throated Treecreeper

Different lighting qualities at the same ISO can
have a significant impact on image quality

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Same camera, same day, same lens, different image quality due to the relatively poor light in the shade reducing the contrast of the treecreeper (ref dynamic range)

Action

Does capturing movement or action improve an image?

Static

In motion



Both images had the same shutter speed ($1/250^{\text{th}}$), and are consecutive frames (not burst mode), the reason the top image looks almost static is that the car was moving slowly at the time

Action

The five bird F's –

Fighting, fleeing, feeding, fornicating, flying

Bird on a stick? Better be an interesting stick



Background/foreground



The background and/or foreground provides context, contrast and can make or break an image. (Sky replacement in Photoshop)

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Background colour



A judge 'suggested' the background could be 'changed', so I did - is the background that important? You decide

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Experience

Experience

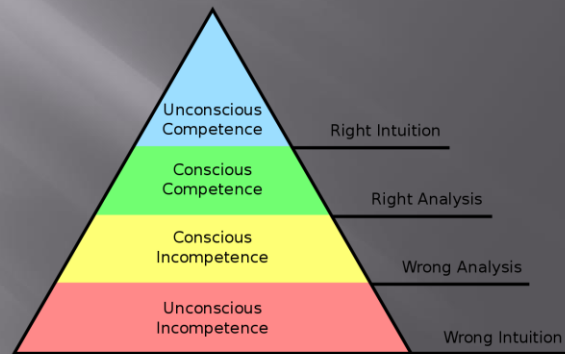
Experience comes with, well experiences

Learn

Practice

Improve

Master



Hierarchy of Competence

Wikipedia

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Ref Wikipedia:

https://en.wikipedia.org/wiki/Four_stages_of_competence#/media/File:Competence_Hierarchy_adapted_from_Noel_Burch_by_Igor_Kokcharov.svg

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Gear

Example pricing (retail as of 21/06/2022)

Modest capability

Olympus OMD EM10 body \$1,000
EM10 with 24-42mm kit lens \$1,200
12-40mm PRO lens \$1,499

Professional

Nikon Z9 body \$9,000
Nikon 100-400mm S lens \$4,200
Nikon 1.4x teleconverter \$1,000

Subject tracking
Pre release mode
High megapixels
High fps
Faster cards
Long battery life
Stronger body

NB this excludes additional batteries, memory cards, bag etc

budget



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Best of Birds In Flight cameras IMHO

Nikon Z9 – 100-400mm zoom + 1.4x, 800mm PF f/6.3

Sony A1 or A9 II – 200-600mm zoom

Canon R3 – 100-400mm + 1.4x, 600mm

OM Systems OM1 or Olympus EM1 III – 300mm f/4 (600mm equivalent)

EFL = effective focal length

Pro lenses are optically much better, and tend to be much more expensive

Eg

Olympus Pro

Canon L

Nikon S

Sony GM

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Skills

Skills

- ▣ Understanding light – quality, angle, creating a mood
- ▣ Colours – match to mood; use the colour wheel
- ▣ Composition – lens choice, depth of field, highlighting the subject
- ▣ Camera settings – shutter speed, aperture, ISO, exposure compensation; practice changing quickly
- ▣ Become aware of decisive moments & be ready, after a while this will become instinctive
- ▣ Post processing – getting the best out of your image
- ▣ Understanding subject behaviour
- ▣ Read widely & train yourself

Develop your toolset

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There is a lot you can do without taking a photo

Colour wheel link: <https://cnd.com/blog/how-the-nail-color-wheel-can-enhance-your-art/>

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Panning

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KEY SKILL - PANNING

"In photography, panning is used to emphasise a subject by showing it in motion with a blurred background."

Hand held – firm stance – left foot pointed at the subject, right foot at right angles to the left foot, feet shoulder width distance apart; left hand under the end of lens; camera pressed to the forehead, elbows tucked into the body; knees slightly flexed; pan by moving the upper body via ankle swivel; control breathing (minimise movements)

Supported – tripod or monopod; ball head or gimbal

Focus on the subject as soon as you can, follow the subject keeping the subject steady in the frame, check that you have focus, use burst mode, press the shutter, keep tracking after you stop shooting

Review your images to see what you could have done better. Repeat. Repeat. Repeat.

What shutter speed?

Unfortunately, it
depends...otherwise
it would be too
easy...

FAST	1/8000
SHUTTER	1/4000
SPEEDS	1/2000
	1/1000
	1/500
	1/250
	1/125
	1/60
	1/30
	1/15
	1/8
	1/4
SLOW	1/2
SHUTTER	1"
SPEEDS	2"

What shutter speed?*

It depends on...

Your skill

Your equipment

Subject distance

Subject speed

Subject direction

Available light

Lens focal length

How accurately you focus

Whether you get the exposure “correct”

And, most importantly, the effect you want

* More on this later

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Homework exercise

- ▣ Finding the subject with long lenses – stare at the subject, bring the camera up into line of sight without blinking, use tripod foot or flash hotshoe as a sight
- ▣ Body position – as per a rifle shooter
- ▣ Breath out and hold...
- ▣ Practice, practice, practice

Homework: shutter speed practice

Purpose – to test how slow you can go with shutter speed; to develop this skill to improve over time

Using your longest lens (highest magnification) focus on a high contrast object. Take an image at 1,000th of a second, then 1/500th, then 1/250th, and keep reducing the shutter speed until your image starts to get blurry.

Slow shutter example



Nikon Z7 II, FTZ II,
Nikon 500mm f/4 @
f/8, VR on,
2x converter (EFL
1,000mm), handheld

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Offline

VR no longer available with FTZ adapter on my Z6?

When the lens has a VR switch, the menu on the camera is grayed out - that's totally normal. When there's a switch, it's in charge, when there's not, the camera is. Also, VR is always on when the camera is. It works like that on modern DSLRs too - when the meter is active, so is VR. It's just that on the Z cameras, when the meter is active, so is the EVF.

As for what type of VR stabilization you get - that depends on a variety of factors. Below are four scenarios (I borrowed them from my Nikon Z series AF book) that should help

Scenario # 1 - Z-Mount Lenses Without VR

If you have a native Z-mount lens without built-in VR, you'll have full five-axis IBIS available (menu-driven).

Scenario # 2 - Adapted Lenses Without VR

If you're mounting a non-VR enabled lens, you'll have three-axis IBIS available (yaw, pitch, and roll - one more axis than we had with regular in-lens VR. All menu driven).

As a side note, another thing to love about IBIS is that it breathes modern VR features into old glass. You could have an antique, manual focus Nikkor sitting in your bag that was born long before anyone had ever considered VR - and yet when you hang it off your Z camera (via the FTZ adapter), it's stabilized. This opens up countless possibilities for using older lenses hand-held - scenarios we scarcely dared dream just a few years ago.

Scenario # 3 - Z-Mount Lenses With VR

If you have a native Z-mount lens with VR, you'll have full five-axis VR available (menu-driven). Pitch and yaw from the lens, the rest from IBIS. For the Z50, you simply have standard in-lens VR.

Scenario # 4 - Adapted Lenses With VR

If you're mounting a VR enabled lens, you'll have three-axis VR available with the Z6/7. The lens will provide pitch and yaw compensation; the sensor provides roll. The Z50 only has normal, in-lens VR.

Note that unlike the first three scenarios, if you have a VR switch on the lens, the system is NOT menu-driven anymore. The lens controls all VR functions - the VR menu won't do a thing for you.

Slow shutter example



1/1,000th



1/500th



1/250th



1/100th



1/60th



Nikon Z7 II, FTZ II,
Nikon 500mm f/4 @
f/8, VR on,
2x converter (EFL
1,000mm), handheld

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With practice, and vibration reduction on, it is possible to take sharp images at fairly low shutter speeds of stationary objects hand held

VR benefit

The benefit of 5 stops of VR

Vibration Reduction
(Nikon,) or VR

Optical Stabilisation
(Canon)

Optical Image
Stabilisation (Olympus,
OM Systems)

Optical Steady Shot
(Sony)

Taking a photo at 1,000th of a second
with out VR means:

With 1 stop of VR you can use 1/500th
of a second

2 stops = 1/250th

3 stops = 1/125th

4 stops = 1/60th

5 stops = 1/30th

Your mileage may vary

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NB for moving subjects, panning will reduce but not eliminate blur as not all the parts of a subject will be moving at the same speed

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Settings

My camera settings

Manual shutter speed and aperture, auto ISO, & exposure compensation

Single shot; Burst mode (20fps); pre-burst mode (with some limits)

Back Button Focusing* (x2)

Matrix and spot metering – subject dependent (even lighting use matrix; contrasty lighting use spot)

Continuous focus (Nikon & Sony – AFC, Canon - AI Servo, Olympus/OM Systems – CAF)

*BBF - #1 Wide area with auto subject detection and #2 single point focus; plus a function button to turn subject detection off

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Discuss

Care using spot metering with small subjects – may miss the subject and hence adversely impact the metering

Experience is required to know what settings work best for you – this will likely change over time as your skills/experience improves

Back Button Focusing (BBF)

BBF moves focusing to a button on the back of your camera and removes it from the shutter button

This means you can focus separately (eg using your thumb) and when you want to and just use the shutter button to take the image

For a more complete description see Photography Life:

<https://photographylife.com/back-button-focus>

Reasons to use BBF by Digital Photography School: <https://digital-photography-school.com/back-button-focus/>

Nikon guide by Steve Perry: <https://backcountrygallery.com/free-back-button-af-guide-for-nikon/>

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Links tested 21/06/2022

Back Button Focusing (BBF)

Default Setting



Press the shutter button halfway to lock focus on the subject

Then press the shutter fully to take the picture.

Back Button Focus



Press your dedicated AF button to lock focus on the subject

Then press the shutter fully to take the picture.

Some cameras have an AEL lock (or similar) button on the back of the camera which locks the focus and also the exposure

Perpendicular subject



Nikon D800E, 50mm f/1.4, ISO 100, f/8, 1/50th

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Slight Angle



Nikon D850 ISO 64, f/13, 1/100th
Sigma 120-300mm @ 120mm
Hand held

not very sharp

sharp

not very sharp

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Slight Angle



Nikon D850 ISO 64, f/13, 1/100th
Sigma 120-300mm @ 120mm
Hand held

The car is on a slight angle ie not
perpendicular to the direction of
travel and the camera

sharp

not very sharp

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Classic panning @ Moomba



Nikon D850
Sigma 100-400 @ 100mm
ISO 800, f/5, 1/2,500th



Nikon D850
Sigma 100-400 @ 100mm
ISO 64, f/5, 1/250th

10x

Tennis



Nikon D800E
70-200mm f/2.8
@ 122mm
ISO 100
f/7.1
1/200th

Distance c. 10m

Tip: a good ball player (for example, tennis) keeps their head still when playing the ball

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Slow shutter speed



Nikon Z7
24-70mm f/4 @
70mm
ISO 64
f/4
1/25th

distance c. 10m

Slow shutter speed, spot focus on central person. Note blur in feet and hands. Only the central person is sharp due to the others moving at different speeds relative to the camera position, narrow depth of field, and panning on the central person's face.

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Fire-works



Nikon
D800E
50mm f/1.4
@ f/8
ISO 100
f/8
4 seconds
Tripod

Distance
over 100m



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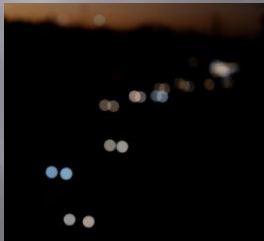
Fireworks Tips

- ▣ Get there early (before sunset)
- ▣ Setup – camera on tripod, remote or cable release
- ▣ Focus where the fireworks will be or on a subject near there (so that it is sharp in the images)
- ▣ Take practice images while still light to check focus
- ▣ Start with f/8, ISO 100 (or lowest setting) and 4 seconds – then vary the exposure time
- ▣ Remember images will probably look good on the screen but may be over exposed so bracket your shots
- ▣ Don't stand down wind unless you like smoke!

Freeway Traffic



0.5 seconds



Defocused 1/50th

5 seconds



10 seconds

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Moon & Stars



1/250th
ISO 400
f/5.6
Manual exposure
(under expose), white
balance = daylight,
tripod



Moon speed = 3,683 km/h
At 384,000 km from earth

Star speed ~ 750,000+ km/h
Light years away

The 500 Rule:

shutter speed is equal to $500 \div \text{Effective Focal Length}$. eg if EFL is 20mm, the 500 rule says you use $500 \div 20 = 25$ seconds

Image: Dave Morrow – download his free 56 page guide to photographing stars



“Stationary” stars

Widest aperture for maximum light transmission,

20 second exposure (24mm lens) – see the 500 rule,

ISO 800+ (adjust for exposure),

Manual focus – check images and refocus if not sharp,

Tripod – stabilisation off,

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Burst mode

Burst mode, also called continuous shooting mode, sports mode, continuous mode, or burst shot, is a shooting mode in still cameras where several photos are captured in quick succession by either pressing the shutter button or holding it down.

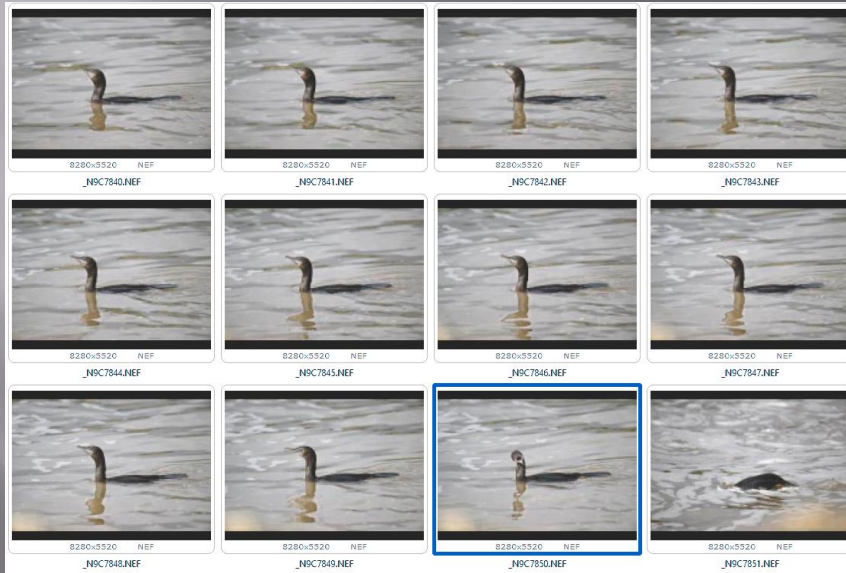


Wikipedia

Typically measured in frames per second (fps)

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Burst mode example



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The bird was frequently diving so I started a burst to attempt to photograph it diving

Little Black Cormorant



Nikon Z9, 100-400mm, 1.4 extender, @ 560mm,
ISO 720, f/8, 1/2,000th, +0.3 exposure compensation, 20 fps

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The first 11 frames were taken in less than 1 second, not the head movement in a fraction of a second

Burst mode



Nikon D850
ISO 250
Sigma 85mm f/1.8 @f/4
1/400th
Shutter priority
Burst mode (7fps),
image 2 of 4
Hand held, no VR



Images 1, 3, 4
blurred -
autofocus is
not perfect

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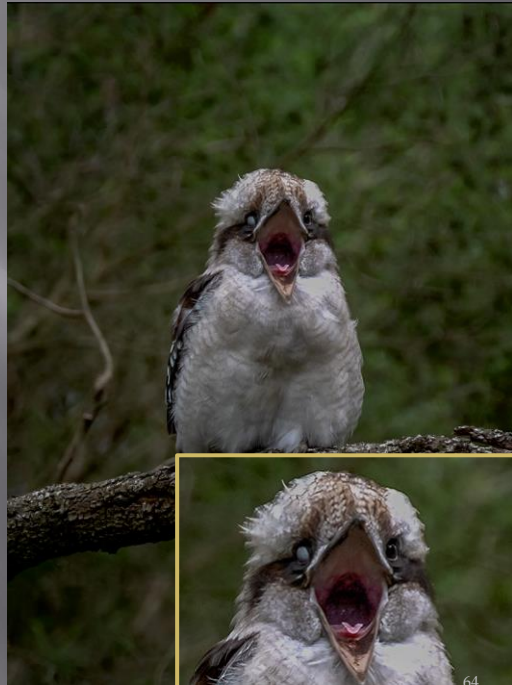
Taken at Grants Picnic Ground

Burst mode

“... birds have evolved a structure for protecting their eyes. Like humans, they have upper and lower outer eyelids. But beneath the outer eyelids lies an extra eyelid, called the nictitating membrane.”

<https://www.audubon.org/>

Using burst mode reduces the risk of not having the eyes visible (tip – use at weddings since you can’t usually retake the photos)



In this, a rare case, only one eye is open

Photographing
things that
move

If all else
fails...

If all else fails



Nikon D850
ISO 64, f/5,
1/1,000th

There's always
Photoshop
– but what
did I miss?



Spot the giveaways – the pole shadow has not been blurred

Aero blur



Original



Nikon D850
ISO 64, f/2.5,
1/8,000th

Crop



PS blur



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Photoshop Blur

Create a sense of speed by adding a blur that flows in one direction. Choose Filter > Blur > Motion Blur and adjust the Angle to match the direction of your subject's motion. Use the Distance setting to control the amount of blur.

<https://helpx.adobe.com/photoshop/how-to/add-motion-blur-effects.html>

Fake it until you make it

Birds in Flight

Ok, now it gets harder

Bird flight is the primary mode of locomotion used by most bird species in which birds take off and fly. Flight assists birds with feeding, breeding, avoiding predators, and migrating.

Bird flight is one of the most complex forms of locomotion in the animal kingdom. Each facet of this type of motion, including hovering, taking off, and landing, involves many complex movements. As different bird species adapted over millions of years through evolution for specific environments, prey, predators, and other needs, they developed specializations in their wings, and acquired different forms of flight.

Various theories exist about how bird flight evolved, including flight from falling or gliding (the *trees down* hypothesis), from running or leaping (the *ground up* hypothesis), from *wing-assisted incline running* or from *proavis* (pouncing) behavior.

Wikipedia

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Ref: https://en.wikipedia.org/wiki/Bird_flight

Panning bird flocks



Nikon D500
ISO 800,
f/5.6,
1/3,200th

When taking images of flocks, some may be not sharp since the camera focuses on one distance only and the birds are likely to be at multiple distances. Increasing the depth of field (smaller aperture) may help however sharpness also depends on the subjects moving in the same plane & speed in relation to the camera position.

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Flocks - faster Shutter – no panning



Nikon Z7 150-600mm @ 150mm,
ISO 320, f/5, 1/5000th

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Birds – fast shutter speed



Nikon D850
ISO 400, f/8,
1/2,500th

To get details in all the feathers and to stop all the movement, use a high shutter speed. Note the catch light in the eye and the partial reflection in the water.

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There is enough detail in the water to imply motion (or does the bird use anti-gravity?)

Slow shutter speed



Nikon Z9
100-400mm
& 2x
converter
@ 800mm
f/11
ISO 180
1/125th

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Ibis @ Jells Park

Photographing
things that
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Problems

Oh oh!

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SLAB?



Nikon D800E ISO 100,
f/7.1, 70-200mm @
155mm, 1/200th



Judge: "A good record shot."

Interpretation – although I was panning well, the shutter speed was too high for the speed of the car, and it could have almost been standing still.

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Record shot

Back or front focus



Sometimes the camera 'thinks' the subject is in focus – but it's not. There is a range of manufacturing tolerances with lens and camera mounts and sometimes this results in the focus not being accurate. Enter micro focus adjustments where you override the camera settings and adjust the micro focus settings so that the subject is now in focus.

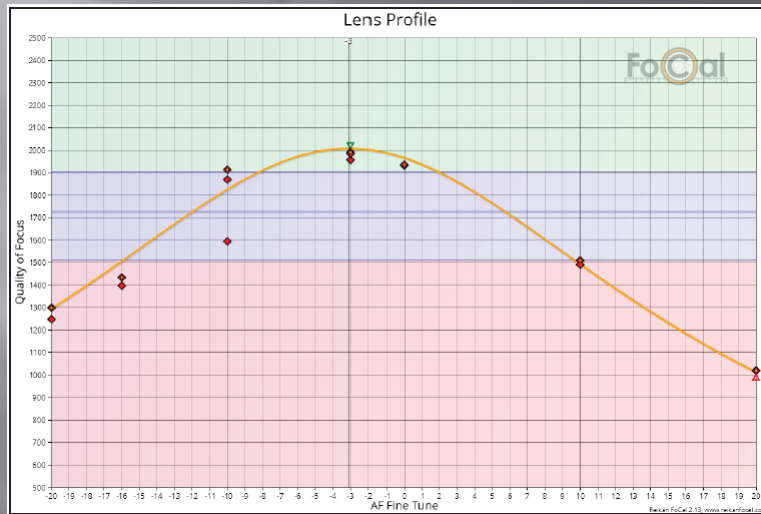
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Testing autofocus



<https://www.reikanfocal.com/>

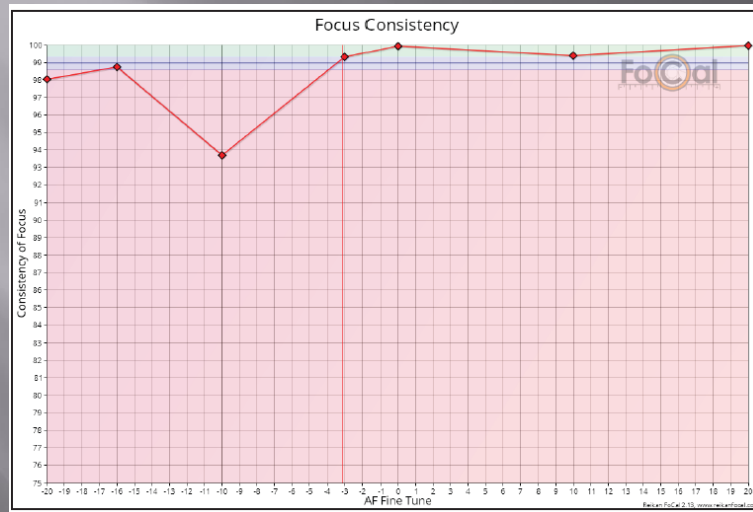
Testing- AF fine tune



Nikon D500,
300mm f/4 PF lens

The test showed a -3 adjustment was required

Focus consistency test



Nikon D500, 300mm f/4 PF lens

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Red band, below average

Blue – average

Green – above average accuracy

Autofocus tips

For DSLRs – test each lens for micro focus adjustments either using a tool such as Focal, or manually adjust

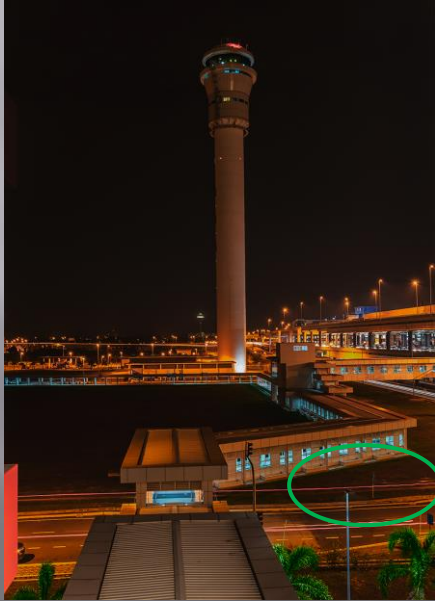
For mirrorless – almost all good! Check if using DSLR lenses via an adaptor

Use burst mode and select the sharpest image

When changing focal length or aperture, refocus

Use a focus mode that covers a reasonable part of the subject, and remember to use manual focus override when the camera struggles

DSLR mirror slap



10 second exposure, DSLR on tripod (without mirror lock up)

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For the next image I turned on mirror lockup and there is the read brake lines of vehicles are straight ie without the ripple

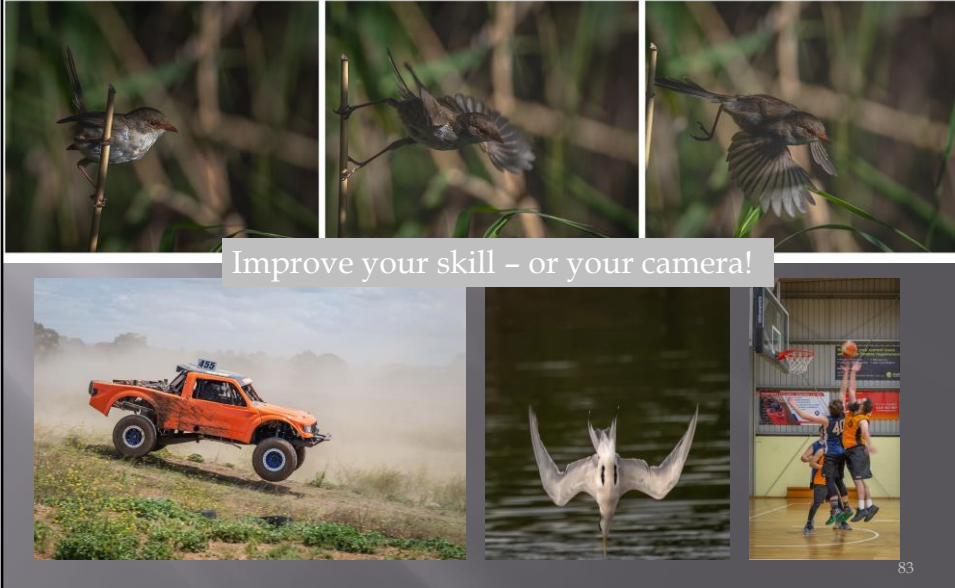
Manual focus override

When your auto focus does not 'work', or you are shooting through an obstacle (eg a tree, grass, a window) or the subject is in very poor light or has low contrast



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Missing the decisive moment



Just buy a better camera! – with high fps/burst mode/pre-burst mode
All taken in burst mode except the last one – axes are known to stick sometimes, in the wood, NB too that axemen tend to keep their heads still

Tired arms

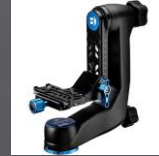


The Osprey stood on the wire over the weir for 40 minutes, and whilst I lifted my camera periodically to ensure it was in focus, I couldn't hold the camera steady for more than 10 minutes. So when it dived I have 2 problems – finding it in the viewfinder and refocusing. The focus eventually caught up (about 0.2 of a second later).

Tired arms



And so I got some good images of the Osprey leaving the water with its prey due to 20fps and animal tracking focus



A tripod and a gimbal would have helped a lot!

Photographing
things that
move

Ideas & tips

Catching the moment



It doesn't need to be fast moving if it's doing something interesting

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White Faced Heron catching an army crab

Zoom during exposure



Nikon D850, 35mm, ISO 320, f/5, 5 seconds, tripod

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Turning camera during exposure



Defocussed



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Ghosting



Nikon D850
ISO 64
f/16
4 seconds
24-70mm @ 32mm
-1 step exposure
compensation
Tripod
Self timer

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Slow sync flash



Nikon Z7
24-70mm f/4 @ 34mm
ISO 64, f/4, 1/20th
Flash: slow sync speed

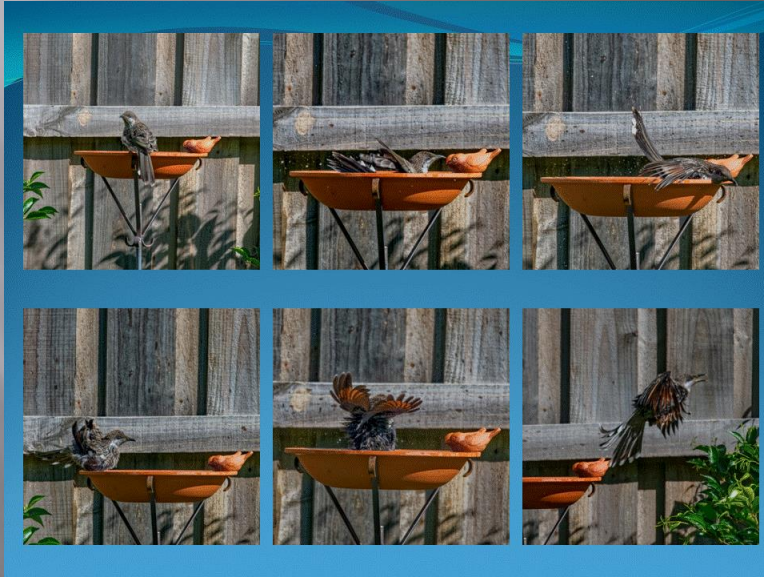
The key to this shot is using a flash slow synchronisation – this means the flash fires at the end of a slow shutter speed creating the blur

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Telling stories



Nikon
D850
150-
600mm @
420mm
ISO 800
f/8
1/1,000th



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Chrono Photography



Nikon 1 J3
30-100mm @ 70mm
ISO 3,200
f/3.5
1/200th

How I did it: 7 images, hand held as the ball went down the lane; opened in Photoshop in layers then used align layers followed by the eraser tool to reveal the ball in different positions down the lane.

Chrono Photography



When you are moving



Nikon D610
14-24mm
@ 16mm
ISO 100
f/11
5 seconds

Waterfalls



Shutter: 1/2,500th



Shutter: 1/6th

To show the detail in the water use a fast shutter speed
To obtain the milky/smooth effect use long exposures - be mindful of the wind moving leaves etc

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Macro

Very challenging

Constantly moving subject,
unpredictable flight

High shutter speed and a
large depth of field

Typically a high ISO image



Nikon D850, 60mm
macro lens, 1/160th,
f/6.3, ISO 64, spot
metering



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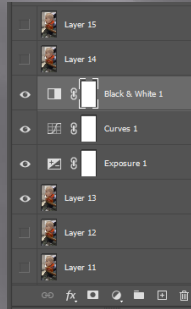
A movie frame

If you are having difficulty capturing an interesting moment, try using a movie mode and then extract a frame from it. Software such as Photoshop, Premier Pro, or freeware such as VLC, Kinovea, etc

Photoshop CC: File/Import/Video Frames to Layers



Video



Photoshop



exported frame

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Ref: <https://helpx.adobe.com/au/photoshop/using/importing-video-files-image-sequences.html>

Eliminating a fence



Nikon D610
70-200mm
@ 105mm
ISO 200
f/11
1/200th



Canon R3, EF/RF
adaptor, 138mm f/1.8
Sigma ART lens at
f/1.8, ISO 100,

ND filters x2, 1/40th

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Ryan used ND filters to reduce the amount of light reaching the sensor hence allowing a much lower shutter speed. At 1/40th of a second and with panning and the wide open aperture of f/1.8, the fence is not visible

3 stop ND filter on the lens, plus the variable filter in the EF/RF adaptor – estimated 5-7 stops total reduction

Photographing
things that
move

Learning to
photograph
movement

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My practice formula

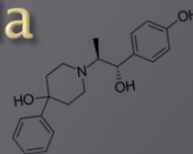
How do you select the 'right' shutter speed?

What effect do you want?

The scientific experiment approach = start somewhere and change one thing at a time

eg start at 1/100th of a second,

- If your subject is blurry double it to 1/200th and repeat
- If your subject is sharp, halve it to 1/50th and repeat
- Keep increasing or decreasing the shutter speed until you get the effect you want



1/200th



1/320th

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Different subjects, different shutter speeds, different effects

How to improve

DON'T START WITH BIRDS IN FLIGHT!!!!

Start with large subjects that move in predictable ways, good lighting, high shutter speeds and short focal lengths – and not close to the subject – the lighter your gear the better

eg trams, busses, trucks - when you start to get sharp subjects (don't worry about depth of field, ISO, backgrounds or foregrounds yet) its time to progress to the next level

Move to smaller subjects such as trucks, cars, then bikes

Then try slower shutter speeds, smaller subjects, longer focal lengths, subjects that move randomly such as animals, children and finally (if you want a challenge) birds

Understand Your Subject

- ▣ eg birds take off and land into the wind
- ▣ Is your subject predictable? Can you tell where it will move? If so it will make capturing it in motion much easier.
- ▣ Understand lighting
- ▣ Understand your camera/lens and how to configure it
- ▣ Understand composition
- ▣ Understand colour theory
- ▣ Understand post processing....

Build your toolset

Considerations 1 of 2

The 'best' shutter speed depends on:

- The effect you are looking for
- Your skill/experience
- Subject size
- Distance to subject
- Speed of subject
- The environment eg wind, rain, lighting
- Camera/lens image stabilisation
- Camera/lens weight (lighter is better)
- Your stability - on solid ground, a bridge, a boat, etc
- Quality & stability of tripod/monopod/head
- Camera frame rate, if you use burst modes
- Composition - room to move in the frame
- Timing!

Considerations 2 of 2

Wait there's more

- Lenses are sharper in the centre
- Lenses are sharper at some apertures (hardly ever $f/8$)
- Cameras do not focus instantly, give them time
- Start focusing before you are ready to take an image
- Centre focus points are generally more accurate
- Using a single focus point is harder to master however it can provide sharper images and is faster than multiple focus points
- Vibration reduction can use more battery
- Some lenses have a panning mode switch
- Some lenses can be customised (eg Sigma/Tamron via a USB dock)

Photographing
things that
move

Learn, practice, improve, master



**Practice
Practice
Practice**

Perfect practice makes perfect

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Homework – practice, practice, practice
Perfect practice makes perfect

Appendices

Photographing
things that
move

T break

Exercises

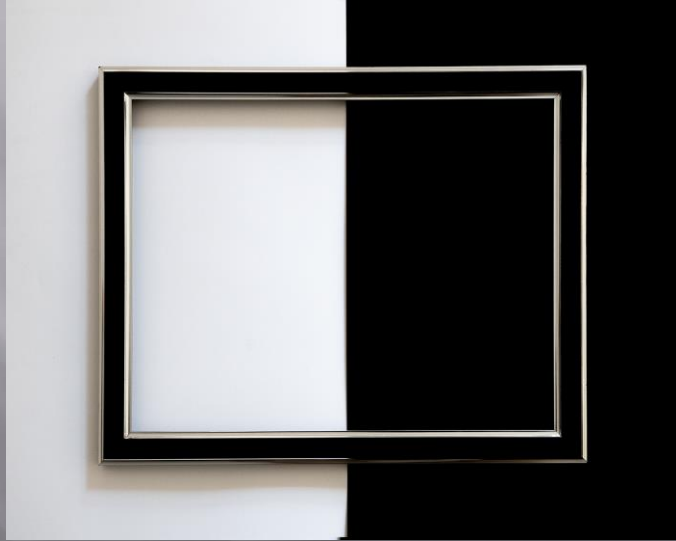
Exercises

You have several options

1. Take a photo of the white card, the black card, then the frame
2. Ask John to swing his moving target and try your hand at taking photos while panning
3. Try rolling tennis balls down the ramp while others try their skill at panning
4. Attempt to juggle while others attempt to photograph all 3 balls in the air
5. Risk driving the remote car while other try to photograph it
6. Zoom the ladybird and photograph it moving

Or have a cuppa and a bikkie...

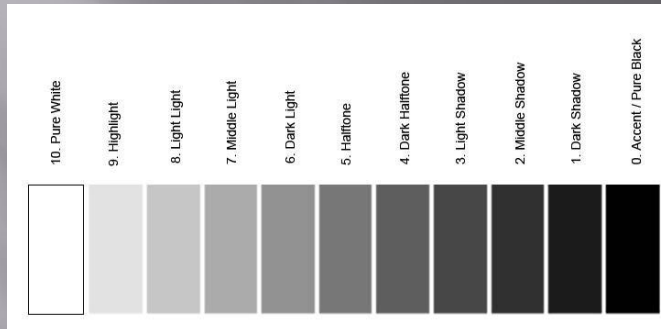
Framed



Does your image look like this?

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The averaging meter



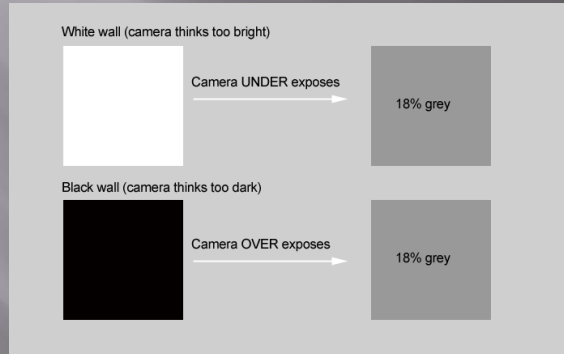
The camera light meter tries to obtain an average 18% grey and so adjusts only white or black colours to grey

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If you have trouble focusing it was likely due to there being no contrast on the black and shite paper for the camera to detect a subject. The frame provides the ability for the camera to focus so although it will likely be distorted, it should be reasonably sharp.

The point of the exercise is to demonstrate that to take a white subject you may need to override the light meter and add exposure, and vice versa for black subjects

Auto means average





Images provided by Geoff Shaw

