

FEATURING: EXCLUSIVE CONTENT FROM YOUTUBE'S LEADING EDUCATORS



FROM DRONE ZERO TO DRONE HERO

37 DRONE TIPS TO GET YOU
FLYING LIKE A FILMMAKER

BY STEWART & ALINA CARROLL
WWW.DRONEFILMGUIDE.COM

FREE

"JUST BECAUSE YOU CAN FLY HIGH DOESN'T MEAN YOU SHOULD"

STEWART CARROLL



ABOVE: MAVIC 2 PRO // 3 PHOTO PANORAMA STICHED IN LIGHTROOM
USING THE DRONE WE WERE ABLE TO QUICKLY ACCESS THIS POINT OF THE RIVER AND ACHIEVE A COMPOSITION THAT WOULD
HAVE BEEN VERY DIFFICULT BY CONVENTIONAL MEANS



PART ONE

10 THINGS I WISH WE KNEW ON DAY ONE

Hindsight is a wonderful thing! Tap into our experience and turbocharge your drone journey!

1. Depth perception is poorer than lateral perception.
2. Wind speed is higher in the air than it is on the ground.
3. Learn how to use the 'Find My Drone' app.
4. Ascent speed is faster than descent speed.
5. Landing flying backwards is easier and safer.
6. Familiarise yourself with the app before you fly.
7. Learn how to use the map to bring your drone home.
8. Learn the intricacies of return-to-home.
9. Understand the battery warning system.
10. Understand the impact of high/low temperatures on your equipment.



TIP

One

Your depth perception is poorer than your lateral perception.

The human eye is very good at discerning when objects are moving from side to side. If you see your drone moving sideways towards a tree then you know to do something about it.

However, once the your drone is a certain distance from you, it becomes almost impossible to tell not only how far away it is, but also whether it is even moving forwards or backwards.

Naturally, this increases the chances of misjudging your drone's proximity to a potential hazard.



TIP

Two

**Wind speed is higher in the air
than it is on the ground.**

Just because the wind conditions are tolerable on the ground doesn't necessarily tell you much about what it'll be like once your drone is 100m up. It might sound obvious to some, but in the heat of the moment when your drone is being pushed by the wind, the implications of this fact might not be so clear.

If you are struggling to get your drone back because of the wind, lower it down as much as is safe to do so before to attempt to fly back. This will conserve as much power as possible for the journey back.

In the above photo from 2015, our Phantom 2 prop guards didn't help the situation when we struggled to bring the drone home. Sports mode is also a good option to give you some extra power to fight the wind.

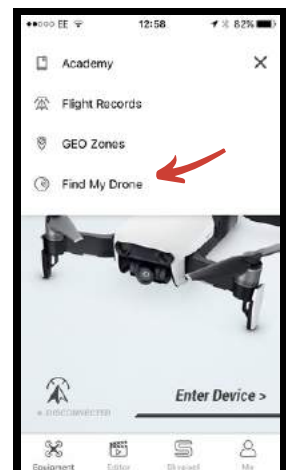


TIP

Three

Know how to use the Find My Drone app.

Much like Apple's Find My iPhone function, use DJI's app to locate a stray drone provided you still have some juice in the batteries. You can even make your drone beep to help you in your search-and-rescue efforts! Worst case, it'll still show the last known location to give you a helping hand in tracking down your investment.





TIP

Four

Ascent speed is faster than descent speed.

Most drones can ascend much faster than they can come back down. Keep this in mind when you are squeezing out every last bit of life in your battery as the time it took to fly up 100m could be doubled for the return journey.



TIP

Five

**It's safest and easiest to land
flying backwards.**

For any high-risk manoeuvres (like landing), it's best to have the drone pointed away from you. When doing so, forwards is forwards and left is left. When you fly towards yourself, all the controls are reversed so it's easy to get confused with this back-to-front stick orientation.

Practise flying box patterns with your drone pointed towards you to familiarise yourself with the controls in reverse. It takes a lot of getting used to and as such, despite years of experience, I'll still fly backwards when bringing the drone in to land.



TIP

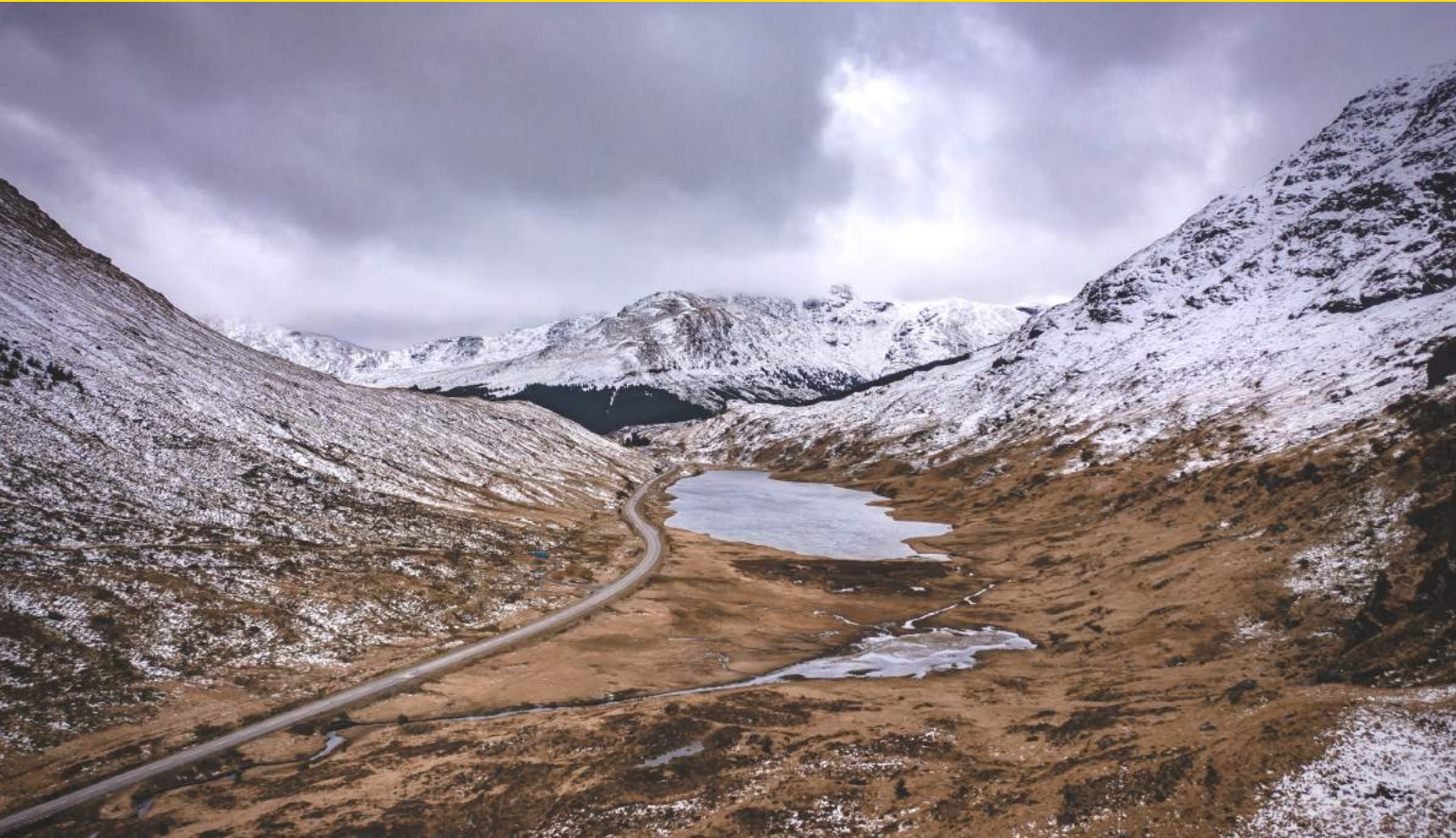
Six

Familiarise yourself with the app before you fly.

There are a LOT of settings in a drone app so working out how to change them during a battery warning return-to-home is not a comfortable situation to be in. Take the time to dig through the menus and familiarise yourself with the application before you take off.



Above: Screenshot from *Drone Cinematography Masterclass 2.0*.

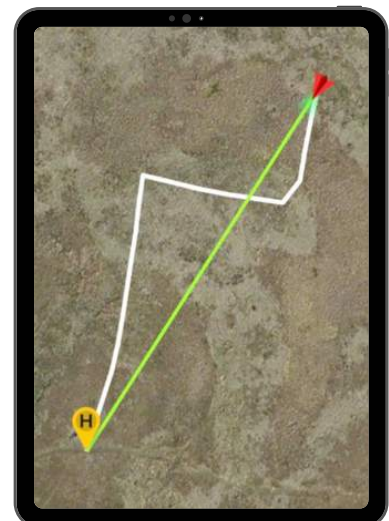


TIP

Seven

**Learn how to use the map to
bring your drone home.**

Provided you have a signal between your controller and your drone, the map will give you all the info you need to bring the drone home should you lose sight of it. In all honesty, if you know how to use the map, there's really no excuse for ever losing your drone. Just point that red arrow back to the home point and fly straight.





TIP

Eight

Learn the intricacies of Return-to-Home.

RTH is a failsafe, not an excuse for you to switch your brain off and let the computer take over. There are many ways to still crash your drone using RTH so dig deep and learn which version of RTH suits any given flight scenario.

One of the main unexpected consequences of RTH is when it shoots up in the air when RTH is initiated. If you are flying under trees, bridges or something similar, the drone will attempt to ascend, in all likelihood crashing into the canopy of the trees for example. In such a scenario, set RTH to "hover" upon initiation.

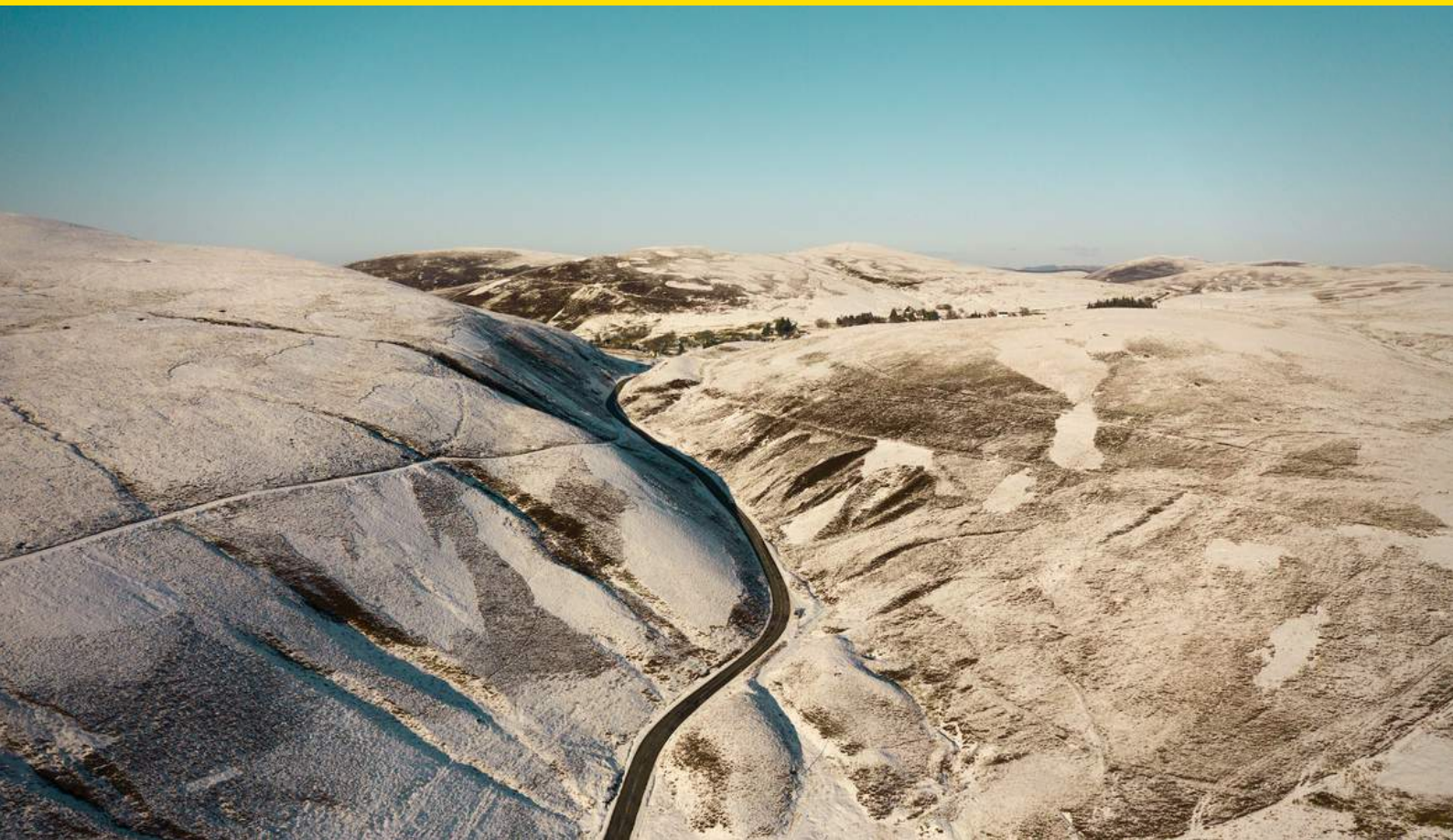


TIP

Nine

Understand the battery warning system.

A considerable number of drone crashes come about by pilots not paying sufficient attention to battery warnings. Some drones will even tell you when there is only enough power left to bring your drone home. Don't ignore these warnings. If the wind picks up a bit and you're miles away, you're going to need every last drop of power to get back so save your nerves (and your drone) and fly smart.



TIP

Ten

Understand the impact of high or low temperatures on your equipment.

Flying on an icy cold day and having your iPhone switch off mid-flight is not a comfortable situation to be in. Do you know what to do if this happens? Well fortunately the drone continues to fly and respond to your controller inputs but you've lost your FPV and if the drone is out-of-sight you're going to be relying on the RTH button on your controller to bring it home (which as we've discussed is not a good idea).

Extreme hot and cold temperatures can play havoc with your battery-powered devices so find out what is vulnerable and take steps to mitigate the impact of these temperatures.

**"THERE IS NO SUCH THING AS A BETTER
FRAME RATE - JUST DIFFERENT FRAME
RATES FOR DIFFERENT PURPOSES"**

STEWART CARROLL



ABOVE: MAVIC 2 PRO // CROP OF A 9 PHOTO PANORAMA STICED IN LIGHTROOM
THIS IS AN HDR IMAGE



PART TWO

5 STEPS TO DRONE CINEMATOGRAPHY GREATNESS

Create stunning aerial cinematography with ANY drone!

In this chapter we distil 20 years of combined filmmaking experience into a 5 step framework that you can apply to your drone filming activities (and any other filming activities for that matter). Follow this framework and you will make the transition from drone technician to drone filmmaker.

1. Create suspense.
2. Create depth.
3. Use motion effectively.
4. Understand your light source.
5. Create effective compositions.



TIP

One

Create suspense by not revealing your cards on the table in the first frame.

If there's only one thing you take away from this entire book then it's the following - don't lay all your cards on the table in the very first frame. Give your viewers a reason to keep watching. In one way, shape or form, reveal your subject.

This can take the form of a camera movement (e.g. a tilt up) that reveals new parts of the frame or it can take the form of having elements of your composition move into or out of the frame.

Example 1

"Thelma & Louise"

©1991 Pathe Entertainment Inc.



In this haunting shot near the end of *Thelma & Louise* we see the fugitives trying to make their escape - at face value, quite successfully. Moments later however, we see the full extent of their predicament as 9 police cars flood the frame. The impact of this shot is far more powerful than had we seen all of the cars in the opening frame of this sequence. In terms of camera movement, the camera is merely pointed down and flying forwards. The reveal is by way of new subjects entering the composition via the bottom of the frame.

Example 2

"Cliffhanger"

©1993 Carlco Pictures Inc., Le Studio Canal+



This shot from the extraordinary opening sequence of *Cliffhanger* starts off with a beautiful establishing shot of the Dolomite mountains. It is only after 15 seconds or so that we realise that this is not just an establishing shot however. As the camera continues moving towards the peaks we start to see some red smoke, eventually resulting in the reveal of our two mountaineers who have got themselves in a tricky situation. In this instance, the simple movement of flying forwards reveals new elements of the scene and tells a wonderfully suspenseful story.



TIP

Two

Create depth by layering foreground, mid-ground and background elements.

We are using a 2D medium (i.e. photography or video) to depict a 3D reality. Create images with depth by layering foreground, mid-ground and background elements in your composition to take the viewer's eye through the frame.

When you arrive on location, look for trees, walls, buildings etc. to fly past, creating an increased sense of motion as these depth cues pass through the frame.

Moreover, use depth to create suspense, e.g. fly up from behind a tree to reveal the subject in the mid-ground.

Example 1

"Volcano"

©1997 Twentieth Century Fox Film Corporation



In this opening shot to *Volcano*, we fly forwards towards the buildings, skirting over them to reveal the cityscape on the other side. The existence of the skyscrapers serve not only to create depth in the image but also as an obstruction to seeing what is on the other side. As an audience, we are eager to see the reveal of the city. Depth is being used as a tool to create suspense. Furthermore, there is a tremendous sense of motion as we shoot past the buildings, adding to the excitement of the shot.

Example 2

"Rush Hour 2"

©2004 Unlike Film Productions



You will see this technique used over and over again in Hollywood cinema. Indeed, this opening shot for *Rush Hour 2* was so good they virtually replicated it frame for frame in *Rush Hour 3*! Again, we fly in looking at the trees initially, then we see the buildings on the top of the hill, then the full splendour of the Hong Kong skyline is revealed. Depth creates three dimensionality in the shot, an increased sense of motion, and suspense as we wait to see what is on the other side of the hill.



TIP

Three

Add value with camera movement.

Use motion in a way that adds value to the story you are trying to tell. It's all too easy to add motion to your drone work with the likes of intelligent flight modes but try to do so in a way that adds value, e.g. by revealing new parts of the frame upon rotating the camera.

Point of Interest, Active Track Spotlight, Tripod Mode, QuickShots etc., are all great ways of adding motion to your drone cinematography but sometimes just the simplest slide to the side can be enough to tell a story.

Example 1

"Shawshank Redemption"
©1994 Castle Rock Entertainment



A complex shot in a film that doesn't just put aerial shots in for the sake of it. In this sequence we fly up and over the ominous prison walls to reveal a courtyard of inmates all headed in the same direction. The camera then reveals a bus full of new arrivals, understandably looking anxious about what lies ahead. The motion was used to reveal several new elements to the story in this outstanding shot.

Example 2

"The Grand Tour"
©2017 W. Chump & Sons Ltd.

If you want to see stunning examples of modern drone work with incredible camera movement then check out *The Grand Tour*. A great example of how sometimes motion for the sake of motion is perfectly acceptable also!





TIP

Four

**Understand your light source -
the sun.**

Easily the most important part of creating beautiful photography and cinematography and the part that is often perceived as the most intimidating to learn.

It's a huge subject with too much to cover here but to give you some actionable advice to get you started, if in doubt, fly with the sun behind the camera. This way the sun illuminates the sky and the ground in equal measure giving you a balanced exposure.

Flying with the camera pointed at the sun adds new challenges in the form of dealing with a 'blown-out' section of highlights in the sky and a silhouetted landscape.

If in doubt, turn around and point the camera away from the sun.

Example 1

Phantom 4 Standard
4K Screenshots



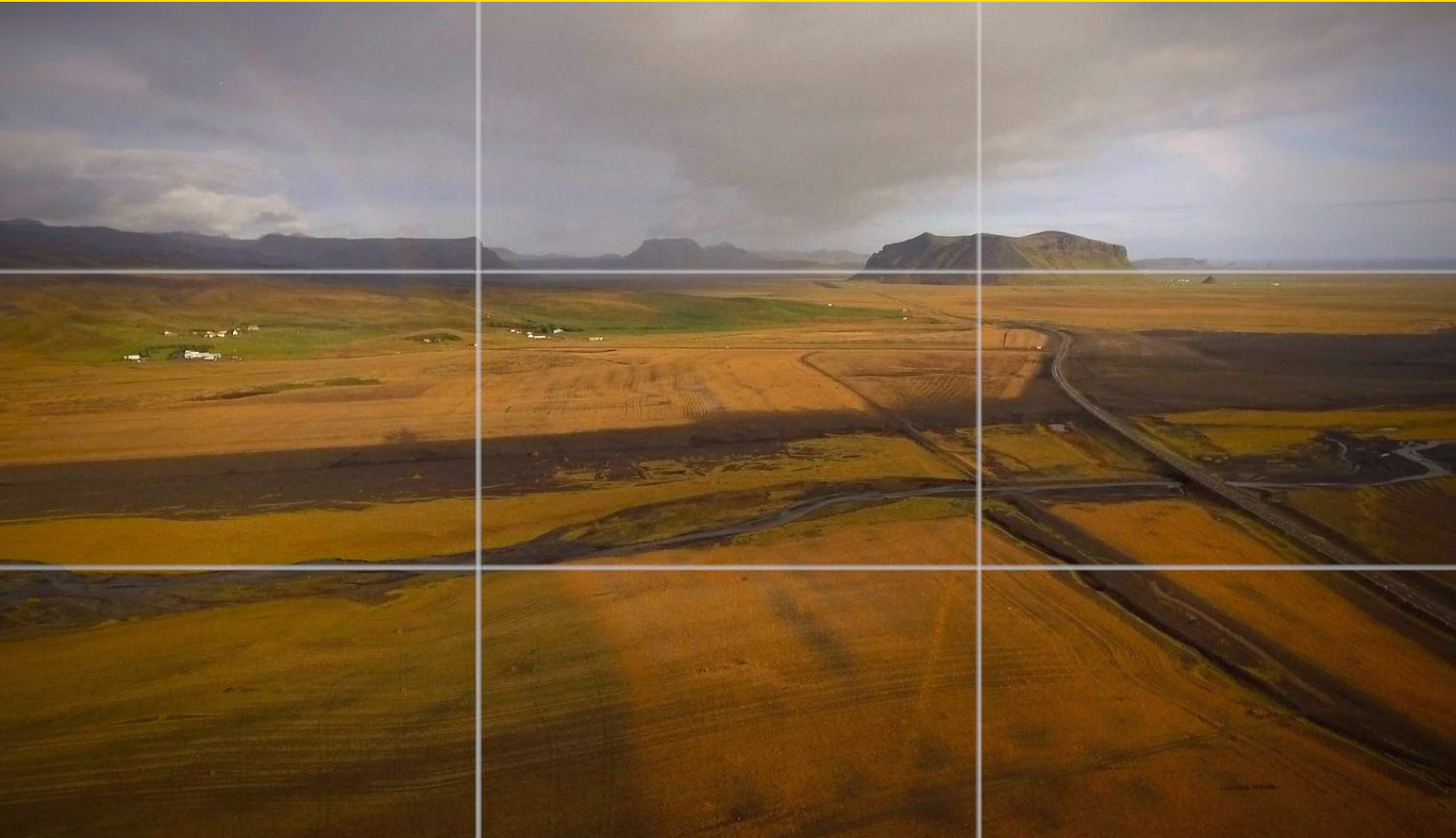
In the first shot above, the sun is behind the camera, coming in from the left. As a result, we have a nice balanced exposure with both the sky and the ground being illuminated by the sun in roughly equal measure. By contrast, in the second image, when flying towards the sun we have a challenge in the form of a blown out sky. Different cameras handle this scenario differently and many beginners don't realise why some shots look balanced and others don't.

Example 2

"The Grand Tour"
©2017 W. Chump & Sons Ltd.



The majority of aerial shots you see in TV and cinema are filmed at the so-called golden hours of sunrise and sunset. Low sun creates warm tones and long shadows. Just look at the difference between these shots. In the first we see the nice bright, saturated colours the sun gives us. In stark contrast, the dull, shadowless second shot has a far different feel to it. There is no right or wrong here but assuming you are gunning for the nicest possible footage, low sun at the start or end of the day is the best way to achieve this.



TIP

Five

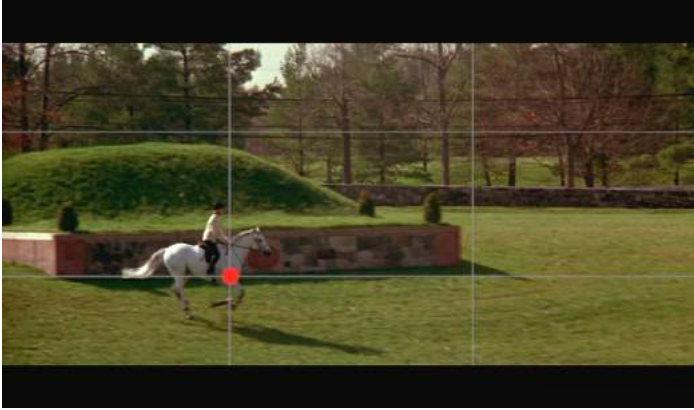
**Create pleasing compositions
that engage the viewer.**

Much like the topic of light, composition is another photography/videography subject surrounded in mystique. In reality however, it's not so complicated when you break it down.

Find pleasing compositions by incorporating focal points and using guides like the rule of thirds to help take your viewer's eye through the frame.

Example 1

"Conspiracy Theory"
©1997 Warner Bros.



The placement of the horse in the lower left third of the frame is no accident. In this composition, the horse has 'looking space' as it has room to travel into and through the frame. If the horse was located in the lower right third the shot would be imbalanced and the resulting visual tension uncomfortable for the viewer.

Example 2

"Expendables 2"
©2012 Barney's Christmas, Inc.



Same rules apply whether you are filming planes...

Example 3

"Triple Frontier"
©2019 Netflix US



...or helicopters!

**"IT'S NOT ABOUT THE
DRONE...IT'S WHAT YOU DO
WITH IT THAT COUNTS"**

STEWART CARROLL





PART THREE

8 SIGNS YOU'RE A BEGINNER DRONE PILOT

Teleport yourself from beginner to expert by avoiding making these mistakes!

This is a list of 8 tell-tale signs that you're a beginner BUT that does not mean only beginners make these mistakes. Far from it! We see experienced pilots and filmmakers falling into these traps all the time. Some could be down to experience and some are down to judgement so it can be hard to decipher what the right course of action is at times.

Sure, rules are there to be broken but more often than not they are there to be followed, so in the absence of a better idea, avoid making these 8 beginner mistakes!



ONE: AIMLESS FLYING

In the fullness of time, you want each of your drone shots to contribute to the story you are trying to tell. Even if you are just shooting a travel vlog for YouTube, with expectations higher than ever for our drone shots, you need to make them count.

What is it you are trying to do?

Establish the scene by showing a wide shot of the beach?

Or are you trying to engage your audience by showing some close-up action?

Whilst the creative side of drone cinematography is largely subjective, one thing is clear...no one wants to see 5 minutes of aimless flying.

TWO: FLYING TOO HIGH

Tempting though it is to see the world from the highest possible vantage point when you first get a drone, rarely is this the best way of presenting your subject. The higher you go, the lesser the sense of motion when the drone moves, making it harder to create excitement in your shots and engage your audience.

If you're filming a building for example, no-one wants to see a roof inspection and some ugly outbuildings. Fly in at a low angle from behind some trees to create some depth. Just because you can fly high doesn't mean you should.



THREE: USING AUTO WB

Some of the things we discuss are subjective and some are objective. This is very much the latter...never use auto white balance. You will never see this in television or cinema.

Set a manual white balance of Sunny or Cloudy, or a custom WB of 7000K for example if you are shooting at dusk. Even if you feel the colour temperature is slightly off, it's an easy fix in post-production. The most important thing is that you do not see it change during the shot itself.

FOUR: USING AUTO EXPOSURE

99% of the time you should be filming on manual exposure. Generally speaking, if you see an exposure change during a shot then it will look more like a news report or a sports broadcast.

If you're wanting to create nice cinematic footage then you need to shoot with a constant, manual exposure. An exception to this could be if there is a deliberate, dramatic shift in exposure, e.g. you start filming inside and then fly outside.



FIVE: SHOTS ARE TOO LONG

It hurts to acknowledge this fact, but not everyone wants to watch your 30 second drone shots one after the other. I know, it sucks, but that's the reality of the situation. As such, you need to fly with the edit in mind.

If that shot took you 30 seconds to complete, do you have a plan to reduce it to 5 seconds in post? Now not every edited shot has to be 2-5 seconds but generally speaking, the goal of the exercise is to keep your viewer engaged so with that in mind, plan to keep your shots short.

SIX: BAD EXPOSURE

A tell-tale sign that you're at the beginning of your drone journey is bad exposure, notably, blown-out highlights. This is generally the result of over-exposing the footage at the time of filming. It's a terrible risk for us as drone pilots because when we look at our monitors outside, screen glare can make things look dark so we crank up the exposure (brightness) of the shot to compensate.

Use the histogram to give you an objective measure of exposure, not influenced by screen glare, monitor brightness, your eyesight etc. And above all, protect those highlights by making sure they don't peak on the far right of the histogram.



SEVEN: SHAKY FOOTAGE

With our little drones, we are looking to emulate the results produced by classic Hollywood aerial cinema. Little twitches and jerks in the middle of the footage make it feel like it was filmed on a little drone so get your settings dialled down to smooth and eliminate that stutter.

EIGHT: WRONG FRAME RATE

Oh boy, books have no doubt been written on this subject. Let's keep this short...if you want cinematic looking footage, shoot at 24/25 fps (24 US, 25 Europe). This is the industry standard to which the eye has become accustomed over the last century so who are we to argue.

BUT by all means, if you are filming for commercial reasons and want the 'smoother' look that 50/60 fps provides then go for it. There is no such thing as a better frame rate, just different frame rates for different purposes.



ABOVE: MAVIC 2 PRO PHOTOGRAPHED WITH PANASONIC GH5
LOCATION: GLEN ETIVE



PART FOUR

14 WAYS TO NOT CRASH YOUR DRONE

Protect your investment and learn from our mistakes!

I don't go out of my way to have an incident when flying...quite the opposite in fact.

That being said, in my 5 years of being a licensed commercial drone pilot, I've had my fair share of spills so in the interests of helping you learn from my mistakes, here are 14 ways to NOT crash your drone! 😊

ONE: AVOID AUTOMATED FLIGHT MODES

Flight automation modes such as quick shots, active track, return-to-home, automatic takeoff etc., are amazing but generally speaking they all have different implications for your drone's obstacle avoidance.

If you don't understand these nuances then those sideways sensors you were relying on might not do the trick when you hoped they would. Until you understand all this, give the automated flight modes a miss.

TWO: AVOID SPORTS MODE

Sports mode is so fast, so noisy and so much fun! BUT it's also the quickest way to destroy your investment if you're not careful.



Enormously increased stopping distances and collision avoidance switched off...in the hands of the uninitiated, sports mode is a disaster waiting to happen.



THREE: DON'T RELY ON OBSTACLE AVOIDANCE

Obstacle avoidance is a crutch to bail you out from time to time - it's not an excuse for closing your eyes and switching your brain off.

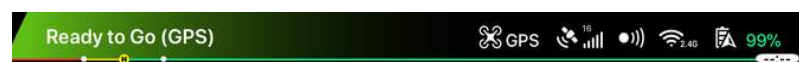
There are many reasons obstacle avoidance can fail you, low light and telephone wires being two such ways. Feel reassured that obstacle avoidance is there as a backup but don't rely on it.

FOUR: DO A SITE SURVEY

At risk of stating the obvious, look around you when you arrive on site. In the heat of the moment, it's so easy to plonk your drone down under a tree and take off without giving any thought to your surroundings. Trust me, I've done it.

FIVE: WAIT FOR GPS LOCK

If you can't wait the 10 seconds required for the GPS status bar to turn green then you really shouldn't be in control of a drone.



SIX: FLY VISUAL LINE OF SIGHT

I know, know...BORING! What's the point in having a drone with an 8km transmission range if you fly VLOS? Fair point. I wish the drone manufacturers would stop marketing these enormous 'out of sight' ranges as a plus point when everywhere on the planet it is a legal requirement to keep your eyes on the drone at all times.

Now, I'm a realist and I know just how tempting those long-distance flights are but just keep in mind that your chances of crashing increase by approximately 1,000 times when you can't see your drone!

SEVEN: DON'T FLY BACKWARDS

Okay, I'm not saying never fly backwards. Like many of these tips, I'm just highlighting that the risks increase when doing so. It's so easy to have your head buried in the screen not notice that your \$1,500 investment is headed straight for a tree. You can't see it on the monitor after all and you haven't looked at the drone for the last 5 minutes anyway!



EIGHT: TAKE YOUR TIME

This is a big one for me. Flying a drone can be fairly stressful at the best of times, especially if you're trying to produce professional results. The last thing you need is time pressure to add extra tension to the mix.

NINE: AVOID WATER

Water and electronics don't mix. This includes clouds...which are wet.



TEN: LEARN TO CATCH LAND

On numerous occasions I've taken a drone off only to wonder how on earth I'm going to land it in the same spot. Sometimes it's not possible to locate a fantastic, flat and solid take off spot that makes for an easy landing. Catch landing a drone is a little dangerous so I'd strongly recommend you wear a glove when doing so but it's an invaluable option to have when required.

ELEVEN: SIGNAL LOSS

If you can't control your drone because of signal failure then you could have a problem. Sure, RTH will probably kick in but what did I say about not relying on it?! The signal on the likes of DJI's Occusync 2.0 is pretty indestructible but it's not infallible.

Certainly, if you have a wifi transmission system then you need to pay much more attention here. Your Apple watch, other phones, power lines, marine radars, buildings, cell phone towers and radio antenna can all play havoc with your signal.

TWELVE: FLY AN AIRWORTHY DRONE

This one falls into the stating the obvious category but it's still worth mentioning. You propellers are extremely vulnerable so keep a good eye on them in addition to the little plastic lugs that secure them to the motors. We've seen cracks in the drone airframe before and batteries that don't seat as well as they should into the body of the aircraft. A brief visual inspection before each flight could save you a world of heartache.





THIRTEEN: USE THE SIMULATOR

If you are right at the start of your journey as a drone pilot then DJI's simulator is worth a look. It's reasonably realistic and you can even simulate wind conditions. As for when you're out for the first time, stick it in Beginners' Mode to limit the height and distance you can fly. These drones can get away from you pretty quick!



FOURTEEN: READ THE MANUAL

And finally, if in doubt, read the manual!

"ARE YOU INTERESTED IN TAKING
YOUR DRONE SKILLS TO THE NEXT
LEVEL?"

ALINA CARROLL



ABOVE: ALINA



CLICK HERE!

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★★★★★

"Thank you for this course! I'm struggling to write anything tangible because I'm still mind blown! Having only owned a drone for about 3 weeks I'm excited to start putting my new mindset as a film maker into practice. It's not a one-off course, but material to refer to for life."

Shaun Lewis

★★★★★

"Stewart & Alina, I wanted to thank you both for putting together this very well thought out, helpful course. I had been waiting anxiously ever since you first advised us of your plans to put this course together. The finished product did not disappoint. I used to fly with the camera on, hoping for great results. From now on I will fly to attain a desired result. Great job!"

Stephen M. Woodburn

★★★★★

"My wife and I want to add our sincerest gratitude to you both for this outstanding course. It's not enough to say thanks, but you need to know that you are an excellent teacher! You are able to keep the audience engaged in a candid manner - all the while delivering serious jewels of information. We hope this isn't the last offering from you guys as we feel we have somehow gotten to know you both! :)"

Paul Dawson