

Chapter 1

THEN & NOW

Kennedy, Fergus. Drone Photography & Video Masterclass
Ammonite Press. Kindle Edition.

INTRODUCTION

- The ideas and tips put forward in this book can be summarized by the phrase “You’re not flying a drone, you’re moving a camera.”
- If you fly your drone with specific goals in mind — concentrating on one technique at a time and carefully planning your flight toward a specific shot — you will find that your photography or video skills improve at a much faster rate.
- You certainly need to know your way around your kit—it’s important to realize that it is the person operating the controls that makes the photograph.
- The magic happens when the drone becomes an extension of you and you can concentrate on the view through the camera lens.



Christchurch Harbor, Dorset, UK. This stitched panoramic shot was created from multiple photographs taken using a DJI Phantom 3 Pro.

INTRODUCTION

- Aviation has come a long way in the past 100 years, with aerial photography taking similarly huge strides alongside it.
- Many ingenious methods have been employed to lift cameras into the skies, both with and without a human operator.
- Modern drone photography has made this easier than ever, so today's photographers can reap the rewards of technological leaps in aviation, flight control electronics, and cameras.



EARLY AERIAL PHOTOGRAPHY

- The earliest aerial photography arguably took place in 1858, when the French photographer, Gaspard-Félix Tournachon (better known as Nadar), took photographs from a hot air balloon which have numerous problems (bulky, limited control over flight direction, and greatly affected by weather).
- In 1882, the British meteorologist, E. D. Archibald, was among the first to start using a kite to lift a camera.
- Around the same time as Archibald was attaching cameras to kites, a German apothecary named Julius Gustav Neubronner was experimenting with using pigeons as aerial photographers where small cameras fitted to breastplates with photographs taken using a timer delay.

EARLY AERIAL PHOTOGRAPHY

- In 1906, German, Albert Maul, used a compressed air-powered rocket to shoot a camera 2600ft (almost 800m) into the air. This approach was refined through the use of powder propelled rockets and gyroscopically stabilized cameras.
- Just six years after his maiden flight, Wilbur Wright took the first photographs from a manned, fixed-wing aircraft in 1909.
- Sherman Fairchild, who graduated from Harvard in 1915 designed the camera's shutter integrated into the lens, which greatly reduced camera shake problems. This would become the standard in aerial photography for the next half century. His most remarkable achievement was when he saw his camera designs go into space on the Apollo missions to photograph the moon's surface from lunar orbit.

DAWN OF THE DRONES

- There is an ongoing debate about the definition of the term “drone.” Originally, it was used to refer to any unmanned aircraft that could operate autonomously or beyond the sight of the operator, but the word has been “tainted” slightly by close links to weaponized military drones (or Peeping Toms/ prying government agencies).
 - Consequently, some people prefer to use the term “unmanned aerial vehicle”
- The aircraft we are interested in can be divided into two types: multirotor and fixed wing.

DAWN OF THE DRONES



A modern folding camera drone can take up roughly the same amount of space in your bag as an SLR camera and lens.



A weaponized Reaper drone. The use of such machinery in recent conflicts has become increasingly controversial and has given negative connotations to the word "drone."

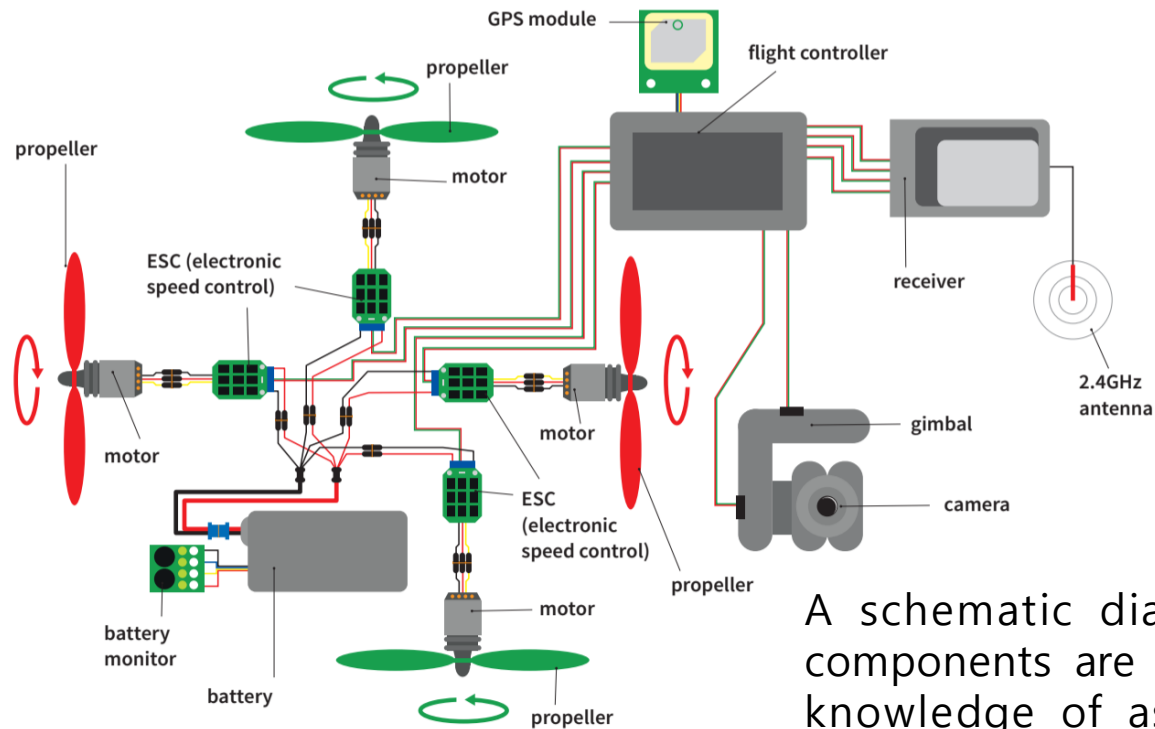
DAWN OF THE DRONES

MULTIROTOR DRONES

- Modern multicopter drones fly with three or more propellers and motors, and provide a stable platform on which to mount camera equipment.
- It flies by varying the speed of each motor and hence the lift produced by each propeller.
- Just to keep a drone hovering requires a complex microcomputer (known as the “flight controller”) that constantly monitors the aircraft and varies the speed of each motor.
- The speed of each motor is also varied according to inputs from the pilot or instructions from a computer program.

DAWN OF THE DRONES

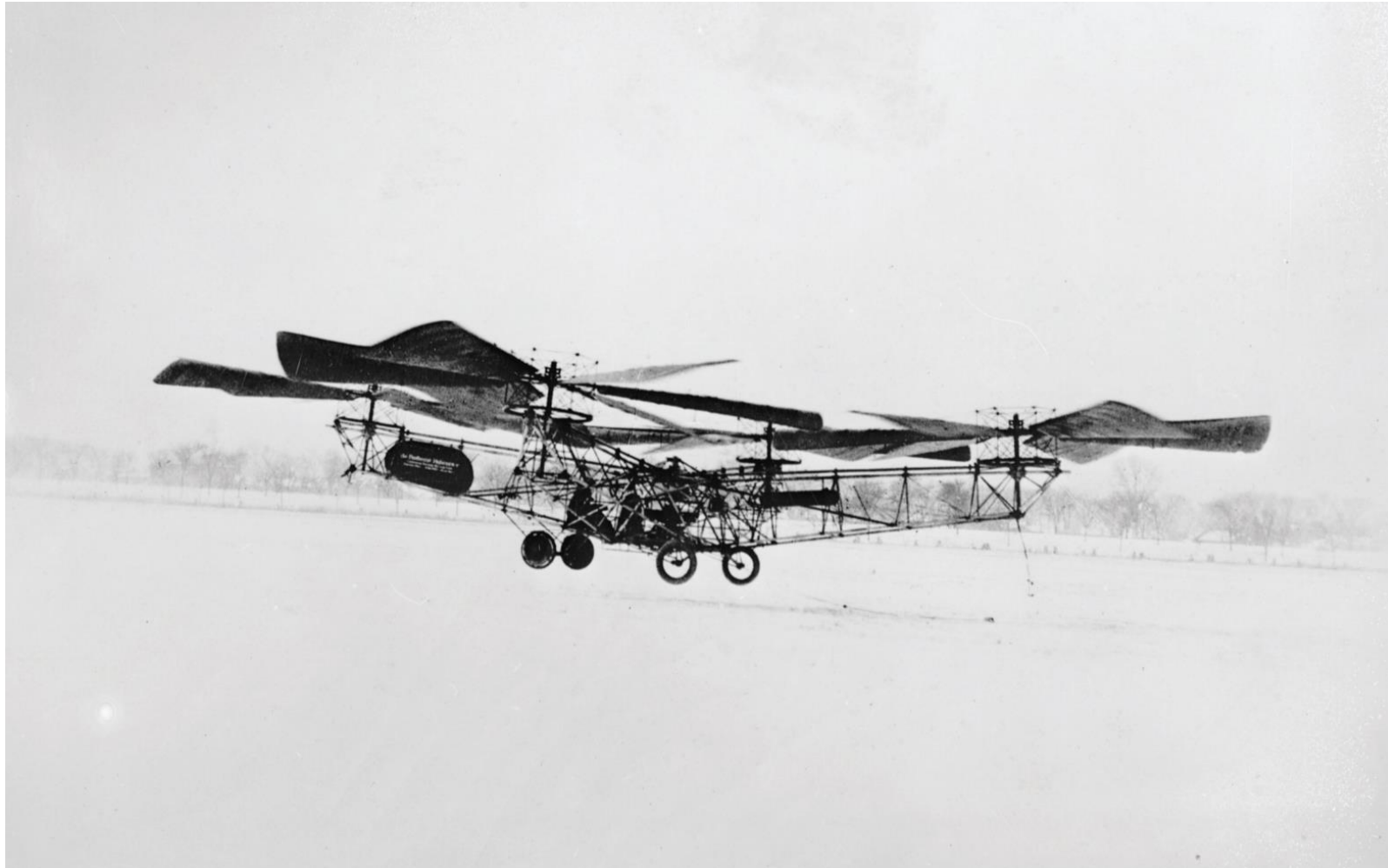
- In contrast to a fixed-wing aircraft, most of the battery's energy is expended fighting gravity—it requires a lot of power just to keep the aircraft in the air.



- As a result, a multirotor drone with a relatively small camera might only be able to achieve a flight time of 20–25 minutes.

A schematic diagram of a quadcopter. The various functional components are common to most multirotors. Although a detailed knowledge of assembly is no longer necessary, having a rough understanding of what's going on "under the hood" will make you a better pilot and improve your troubleshooting capabilities.

DAWN OF THE DRONES



The multirotor is not a new concept. This photograph was taken in January 1923, but manned multirotor aircraft are known to have been flying as early as 1907. However, the idea didn't catch on. Without the computerized control that we have today, there were major stability issues that made multirotors difficult to pilot.

DAWN OF THE DRONES

FIXED-WING DRONES

- Although not the main thrust of this book, it is also possible to attach a camera to a fixed-wing or “airplane-type” remote-controlled aircraft. A number of models is available.

RAPID EVOLUTION

- One of the most exciting—and frustrating—aspects of drones is how fast they are developing and evolving.
- Most of this development is happening to enthusiast-level camera drones, with a mind-boggling amount of technology increasingly being built into very compact drones such as GPS navigation (originally used in ships and later cars), accelerometers (as found in cellphones), high-quality, miniature cameras (also pioneered in cellphones), ever more efficient Lithium Polymer batteries (a technology already in use in the radio-controlled world), and brushless gimbals (developed from handheld camera-stabilizing devices).
- You can now buy a folding drone that will sit comfortably on the palm of your hand, is stabilized by GPS when outdoors, can avoid obstacles, has optical and acoustic sensors for flying indoors, can track moving objects automatically, be preprogrammed to fly to waypoints, and capable of shooting both high-quality 4K video and still photographs in Raw format—all for less than the price of a mid-range DSLR camera.

RAPID EVOLUTION

DJI

There is a reasonably strong emphasis in this book on DJI products. This is simply because they are by far the most popular small- to mid-sized drones on the market. However, most of what applies to DJI's drones applies equally to models from other manufacturers: although the exact methodology or terminology might vary, the principles remain the same.

- Outdoor sports enthusiasts are embracing the portability inherent in the latest generation of camera drones.
- Camera-equipped drones have revolutionized the way you can photograph the world around you. No longer are you limited to where you can stand—the space above your head is also a potential camera position that can be used to provide you with fresh angles.