

Introduction

There have been photography handbooks before (many), and I've been responsible for some of them. My first is now almost a historical document. So why bother with this one? The simple truth is that photography is changing faster now than at any time in its history. This handbook is a world away from the earliest I wrote because it has to deal with very different issues.

What's changing most is, perhaps surprisingly, not the technology but the very idea of what photography is about. We already had the digital revolution. That's now in the past, and what we have instead now is steady improvement in the technology. Capture becomes smarter and neater, and the possibilities of what you can then do with your images continue to increase. A bigger deal entirely is what all of us hope to get out of our photography and how to succeed at doing so. In an ocean of photographs, we all want to make interesting, personal images that somehow stand out among the millions—maybe trillions of others. It's a new world of photography in which everyone shoots.

For almost their entire history, photographers recorded places, things and events, and for much of the time it was enough simply to show what they looked like because the audience was never going to be able to experience these things for themselves. This was the purpose of the

early picture magazines, and the “*f/8 and be there*” (i.e., set your camera and show up) mentality ruled. As Lou Klein, the first art director who influenced me, said, it was all about being “in the right place at the right time.” Of course, it wasn't. As a professional, he assumed that I was already capable of making a good picture out of any situation.

Now, there isn't that division between professionals and amateurs, and that's exactly why this handbook exists. It's about everything we all had to master, and that hasn't changed. What digital has done, however, is to enable photography for everyone—including those without a traditional camera—and to enable sharing with everyone else. There is no passive audience any more. For travel shooters, there are no viewers back home fascinated to see what they would never be able to for themselves. The audience for photos is now worldwide and they, too, take pictures, in the same places and at the same times. That simply means we have to try harder and become more skilful, not just at working the equipment but also at making images that are different and uniquely appealing, and then sharing them effectively. This handbook covers all of these bases, and its aim is to get you there.



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TECH

If you think of photography as a creative activity (I do), there's no other that comes close to having so much technology in it... yet, it's two sided. All that goes into this technology helps us to create imagery, occasionally opening up new possibilities and even triggering ideas for new styles of picture. At the same time, photo technology can hold things back simply by diverting energy and attraction away from photography and towards bright, shiny toys. Bringing together this technology and the taking of imaginative pictures is a large part of what this handbook is about. You can't do one without the other, and I really believe that photography should be a smooth process that moves seamlessly from the tech stuff through operator's skill and the visual craft of putting an image together, all the way to having a purpose and an idea behind shooting.

Old photo tech was actually much more demanding, even if it was less sophisticated. Imagine having to coat a glass plate with a cocktail of chemicals that you'd just prepared before even thinking of taking a picture (that was nineteenth-century photo reality), or loading, winding, rewinding, storing, and then processing film (twentieth-century reality). Like every other kind of consumer technology, the complexity piles up, but the operation gets easier. Unless you're determined to make things difficult for yourself, taking a photograph these days is so easy that it requires hardly any thought—at least as far as working the camera or phone is concerned. You could even skip this chapter entirely and you'd still be able to shoot a useful image most of the time. Read on though if you'd like to improve the quality of your images.

A FEW THINGS YOU SHOULD KNOW

Mastering the tools of the trade is a basic necessity for any endeavor. Photographic tools are essential, and so is any photographer's skill with them. The question is, how much do they contribute to the final image?

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TECH | A FEW THINGS YOU SHOULD KNOW

In case this seems like a strange question, photography more than most creative activities has a complex relationship with equipment. Bright and shiny mechanical engineering attracts many people for its own sake, and unfortunately for photography, this tech-love can take away from the passion for making images. Not everyone sees this as a problem, but if you have a hint of concern, the answer is a balanced view in which the tools are always in the service of the end result.

With that out of the way, operating a camera is, like driving a car, more about dealing with the interface than with the inner workings. No driver cleans a carburetor any more, and we're increasingly removed from the camera's workings. These are sealed engines, and we photographers mainly benefit from this as it allows us to concentrate on more essential matters like making great images. That said, there are some things worth knowing about our tools.

Probably the first thing to note is that the menu makes a modern camera look more complicated than it is. There's usually a huge choice of settings and other options, but it masks a functional simplicity that hasn't changed much in decades. The lens projects an image onto the sensor and can be focused to make this image, or parts of it,

sharp. Two moving parts interrupt the light path: an aperture diaphragm in the lens that opens or closes to let more or less light through, and a shutter that can be set slower or faster to the same end. As the aperture also controls depth of field and the shutter can freeze or blur motion, you can choose which combination of settings to use to get the right exposure. You can also choose to amplify the sensor's sensitivity to control the exposure, and a light meter inside the camera helps you decide what that exposure should be, meaning how bright or dark the photograph will be.

That's basically it. All else is refinement or an excess of choice, depending on how you see it. Menus are extensive because they can be and because they give camera manufacturers something to talk about, but realistically, most of the choices are intended to be set once by you and then left alone. Many of them are ways for you to personalize the camera's operation. The entire menu and instructions are worth going through at least once in detail, although it's unlikely you'll need to revisit most of it. Even if you don't bother or leave it until later, the default automatic settings will usually give you a perfectly good result as almost every function can be automated.



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Above: Whatever the camera (this is mine), it's an extension of your eye and hand, and if you're a committed photographer you need to be completely familiar and comfortable with it.

THE HEART OF THE MACHINE

Photography is very physical and the camera in your hands is the embodiment of that. It's a tool, a machine, a piece of engineering. The casing and controls are what we engage with and have opinions about (chunky, neat, ergonomic, elegant, etc.), but even so, modern cameras are increasingly defined by their sensors.

Previously, you could expect a camera to have a very long life; image improvements came from advances in film. Now, it's built around the sensor and the supporting software and firmware, all of which are continually being improved, so you'll at some point want to replace it. If not exactly disposable, modern cameras have a lifespan limited by technological advances.

If you think just about image quality—the amount of detail recorded, color faithfulness, the range from bright to dark—then the camera body is only as good as its sensor. This makes it a little difficult to judge between models, because not only is sensor technology complex, but camera manufacturers reveal as little as possible about it while at the same time always putting the best interpretation on its performance. Most opinions shared on the internet about camera-sensor performance are of little value, but at least one site, DxOMark, publishes objective comparisons.

How much you actually need to know about your sensor is a lot less than the full technological picture. The first thing that may affect your choice of camera is the sensor size and how many pixels it delivers. The pixel is the smallest unit of an image, and each one comes from a photosite on the sensor—in essence, a light cell covered with a small lens. The amount of detail you can record depends on both the size of the sensor and the number of pixels.

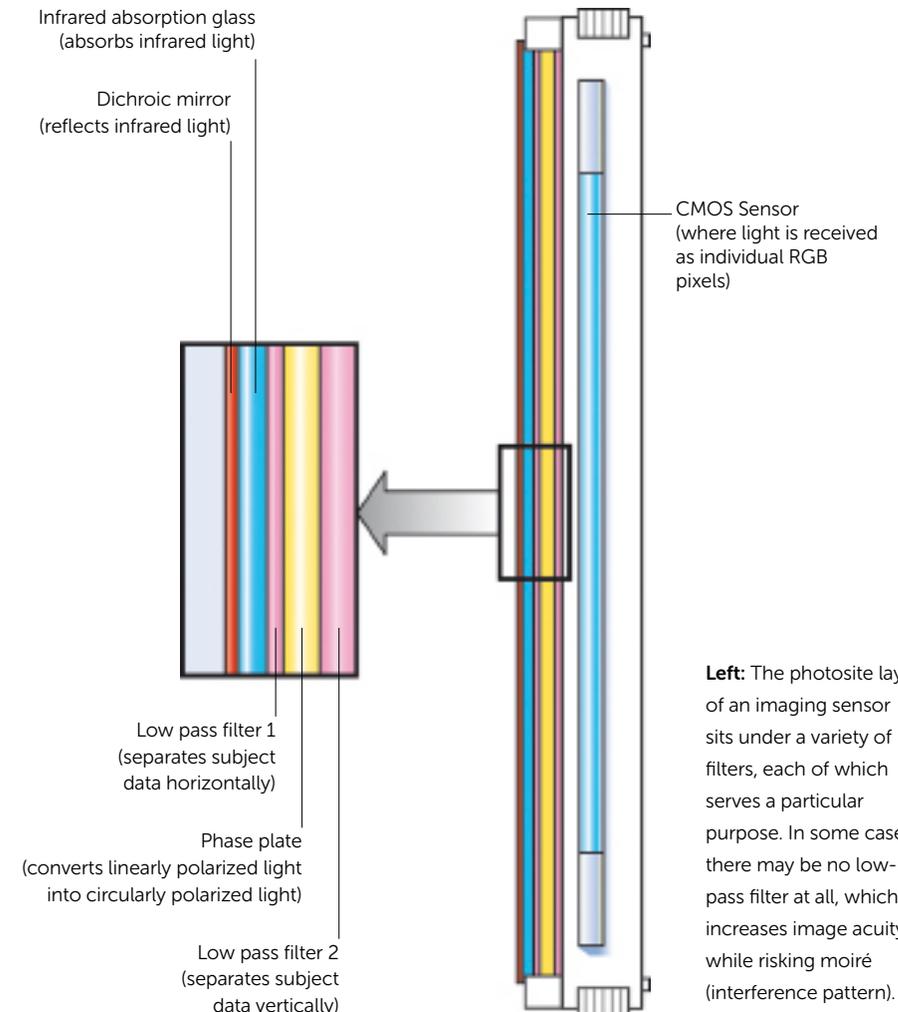
For image quality, the larger the sensor the better, which is why professional DSLRs are full-frame (24 x 36mm) and more expensive than the APS-C (16 x 24mm) format popular in mid-level cameras. It's also why there's a demand in studio, landscape, and architectural photography for the larger, bulkier, and much more expensive medium-format cameras and backs, which range from around 30 x 45mm to 40 x 54mm and have resolutions up to 100 MP.

That's not the end of the story, though. There's still a tradeoff when the sensor is being designed between packing in as many photosites as possible (higher resolution) and having larger photosites (better light gathering). High pixel density means more detail recorded, but larger pixels mean a better range of tones from bright to dark and better ability to shoot in dark conditions. The range of tones from bright to dark is called the dynamic range, and it depends considerably on the signal-to-noise ratio and the noise floor. A low noise floor means more detail captured in dark conditions, and that comes with larger photosites.

In short, maximum resolution, if that's important to you, comes with diminished ability to shoot in low lighting, and some camera sensors are designed for that. Other camera models balance quite high resolution with good low-light performance. The priorities are for you to choose.



Left: The state-of-the-art, 42-megapixel full-frame (36 x 24mm) sensor at the heart of the Sony Alpha 7rii.



Left: The photosite layer of an imaging sensor sits under a variety of filters, each of which serves a particular purpose. In some cases, there may be no low-pass filter at all, which increases image acuity, while risking moiré (interference pattern).

Fixing Lights

Stands:

The standard lighting support for most studio lamps is a tripod stand, and for the typical three-quarter-top position used in many lighting arrangements it is the most convenient. High and low positions, however, increase the variety of lighting quality and call for different stand sizes. A rolling caster stand is the easiest to move around in a permanent studio, but a collapsible stand can be stacked when not in use. For stable high positions, a wind-up stand is useful.

Counterweighted Boom:

This lighting boom has a much greater variety of positions, from very high to very low, including the important position of directly overhead. The counterweight can be adjusted by sliding it along the boom, by sliding the entire boom in its collar, or by adding or subtracting to the weight itself. Boom stands need care when being moved as they may overbalance.

Safety Cable:

A useful precaution when suspending heavy lights overhead is to attach the lamp separately to another ceiling or wall fitting with a wire or strong nylon cable.

Extension Arm:

A bar attached to a standard locking collar fits onto any regular light stand and enables a lamp to be aimed more downward.



Pantograph & Ceiling Track:

A pantograph operated manually or by an electric motor gives adjustable height and keeps lighting off the floor. It is normally used with a ceiling track. These free up floor space by keeping lights and cables high (ceiling power sockets are useful). They're best for overhead positions and large lighting fixtures.



Wall Boom:

A simple swiveling arm can be stored flat against the wall or swung out when needed to take a single lamp.



Expanding Sprung Pole:

This telescoping pole, padded at either end to give a firm grip, contains a powerful internal spring to lock it firmly between floor and ceiling.

Goalpost Arrangement:

This is a simple DIY method of fixing a large light overhead. A pole is clamped horizontally between two regular stands and the light is then clamped to that. Goalpost arrangements are useful for still-life tables, with the stands on either side.



LIGHT QUALITY

It's almost a cliché of photography that the quality of light can make or break a shot, but it also happens to be true. Unless you have a subject in front of you that's so amazing it wouldn't matter what light it was shot in, the one thing you can usually do to improve a photograph is to make sure it's attractively or excitingly lit.

"I search for perfect light, then hunt for something earthbound to match it with."

These are the ideals for light-driven photography, but of course circumstances and the time you can spend mean that you will often need to shoot in less-than-perfect

light. Even so, by understanding how light works on different scenes—how it reflects, refracts, and the layout of light and shade—you can still usually make an improvement. It's also no bad thing to take the attitude that all light can be very good for something.

Below: An unusual combination of lighting with pale-colored cliffs on the camera side of the canyon reflect sunlight up and back to the rocks.

That in turn means having a feeling for lighting, a conscious appreciation of it, and developing that sensibility to the point where you know why the lighting is the way it is. In other words, you need to grasp not only the magic of light but the logic behind it as well.

Going back to the ingredients of a photograph on page 100, light has a scale of importance that at the lower end is unremarkable, but at certain times of day, in some weather, and in certain configurations of street and buildings, it starts to take over. Light then imposes itself on the scene and on the image. At the very top end of the scale, the shot is all about the light effects, and they become much more important than the physical subject.

There are basically two ways of working with light in shooting. One is to have an idea of what lighting might best suit your subject, then wait it out or return another time when you anticipate that you'll get that light. The other is to shift gears and look for subjects and compositions that will make the most of the light you're already under. An example of the first was a street shot by Australian photographer Trent Parke of strange light on a passing bus that he returned for more than a dozen times over the course of a month until he caught it exactly as he wanted. Of the second approach, American mountain photographer Galen Rowell wrote,



COLOR

Just as you can push light toward being the most important element in a photograph, so too can you make color itself almost the entire subject. It sounds straightforward, but beware. Everyone likes a pretty shaft of light, but color provokes opinion.

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IMAGE | COLOR

We experience color differently from other visual effects; the brain processes it in a unique manner and it affects emotion. Our emotional response to color is complex—affected by culture, memory, and biology—but the net result of association and symbolism is that people actively like and dislike colors and the ways in which they're combined. Everyone has opinions about color that hardly ever have to do with the other ingredients of an image.

One thing you can be sure of is that if you use color firmly and deliberately in your photography, you'll acquire both fans and critics. When the American New Colorists came along in the 1970s, they scorned the rich colors of Ernst Haas, Pete Turner, and Jay Maisel (critic Max Kozloff dismissed Haas as “the Paganini of Kodachrome”). As ever, style and taste play a large part in this. Just remember that one photographer's subtle color is another's drab.

The next few pages show how color can convey a sense of place, atmosphere, and mood.



Above: A pink cotton cloth covering this Chinese birdcage suffuses it with a single color.



Above: A glacial meltwater lake with submerged trees, which add some green to an otherwise turquoise scene. The framing carefully excludes anything other than the water to maintain the single-color theme.

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Light & Color

These two are inextricably linked, not only because light has a color of its own, but also because the direction and clarity of it affects saturation, highlights, and shadows. These in turn affect the style of color, as follows:

- Rich colors are enhanced by two kinds of light: clear axial light (such as in clear weather with a low sun behind the camera) and soft gray diffuse light.
- Muted colors stay restrained under soft and shadowless light that keeps the contrast down.
- To help avoid shadows weakening colors, compose to keep them small in the frame and expose down to keep them as dark as possible.
- Highlights are often more of a problem than shadows for weakening color. To avoid this, either keep them small (specular highlights from a single source like a clear sun) or shoot in diffuse light that spreads the area of the light.
- Dusk in clear weather often turns skies into pastel colors, and these reflect subtly off surfaces.

BLACK-AND-WHITE REVIVAL

Apart from a few obscure and difficult processes like Autochrome, photography in the beginning simply meant black and white. Generally, this persisted right up to the 1960s, aided and abetted by the standard printing methods for magazines and books.

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IMAGE | BLACK-AND-WHITE REVIVAL

Color was the exception, but as soon as it became easily available to everyone, it almost swept black and white away. Color was like the real world, color was exciting and enjoyable, and from Kodachrome to modern digital sensors, the colorfulness of photographs became one of their major virtues. A hard core of black-and-white photographers remained, mainly in the art world and in the purer realms of reportage and street photography. Now, however, there's a black-and-white revival, maybe as a reaction to possibly too much color washing around, maybe even a harkening back to tradition, but also because the three-channel way in which digital cameras record gives photographers unprecedented control over how their images can translate into monochrome.

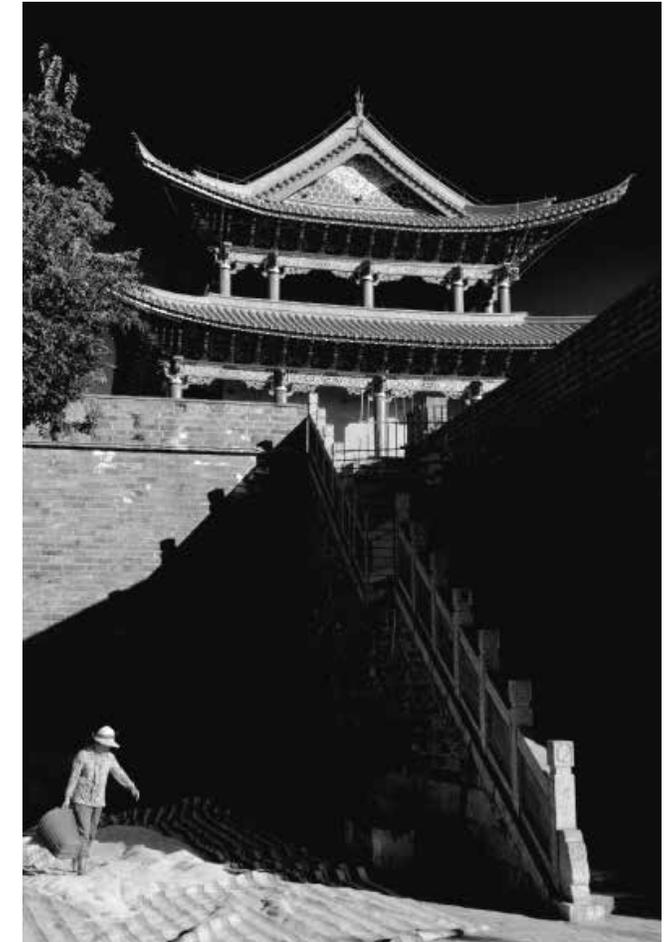
The fundamental appeal of black-and-whites is that, by definition, they're a distance apart from reality. We see and

experience the world naturally in color, and so most photography naturally follows suit. However, this brings with it the expectation that a color image should somehow be accurate and represent what the scene actually looked like. Black-and-white photography isn't burdened by this—it's automatically an interpretation rather than a representation, one step removed from reality. If you want creative expression, realism doesn't serve you very well, and that's a plus for black and white. Color is universally available, and even more to the point can be processed for richness, vibrancy, and super-saturation (which it is, too often). This, maybe perversely, has given black and white a status almost of refinement. Also, the digital conversion process that we'll see on the following pages gives much greater creative control. Henri Cartier-Bresson said, "Black-and-white photography abstracts things and I like that."



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Above & right: Conceived at the time of shooting as a black-and-white photograph, the picture-postcard character of solid blue sky, red roof, and green leaves are dramatically converted during processing into a graphic image. Lowering blue and cyan blackens the sky and shade, while raising red makes the roof of this Chinese gate tower contrast with the sky. The overall effect is of overlapping triangles, and black-and-white conversion is principally responsible.



STRUCTURES

Contemporary architecture has never been so visually striking, and this is bound to have an effect on photography. There is no single architectural movement and all of it is strongly influenced by advances in construction technology.

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SUBJECTS | STRUCTURES

Just as photographers like to push boundaries, so too do architects look for ways to be different and stretch their expressive possibilities. From apparently gravity-defying buildings like the Capital Gate Tower in Abu Dhabi and the Auditorio de Tenerife in Spain to the fractured asymmetry of Frank Gehry's designs or Zaha Hadid's sweeping fluid forms, what the leading edge of contemporary architecture has in common is the intention to astonish. Technology and wealth are at the heart of

this, and for the dramatic style of architectural photography, there has never been a better time. A distinct trend among architectural photographers is toward striking composition, lighting, and viewpoint to exploit the intentional drama these structures offer.

While this is the latest trend, the huge backlog of historical buildings remains to be photographed. Traditional buildings tend to do well with traditional shooting techniques, i.e., keeping verticals vertical. This is one of



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Above: Calke Abbey, an English country estate in classic Baroque style. Early morning raking sunlight makes the most of the façade.

Opposite: The Tofu House in Kyoto, a conceptually simple house that is austere yet "floating," shot at Magic Hour.

INTERIORS

From a bedroom to a concert hall, interiors are among the most technically demanding of subjects. That said, once you've mastered the techniques of viewpoint and lighting, this is a very repeatable and predictable area.

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SUBJECTS | INTERIORS

The checklist opposite shows what's involved from the technical side, but beware of letting this dominate the shoot; success ultimately depends on how you envision the shot and what information and mood you want to convey. This in turn depends on the kind of interior and its design style, as well as on how the shot is going to be used (i.e., commercially or editorially). For example, if it's a historical interior, are there associations or meaning attached that needs to be expressed? Would

it be valuable to communicate these in your images?

Viewpoint is always the first decision. The way we experience interiors for ourselves, by looking around, means that in real life we take in a very wide angle of view, but not all at once. This

Below: A colonial "Black and White" house in Singapore, given a deliberately airy and spacious wide-angle treatment to convey the open style (common before air conditioning).



Left: In a conversion of a 1920s apartment in Shanghai, Singapore architects SKEWcollaborative embedded a multi-planed structure that runs through the several rooms to serve as furniture, cupboards and to carry utilities.

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poses a problem for a still image, and usually the only way to come close to this effect is by using a wide-angle lens and shooting from a position that gives wide coverage. This position is often a corner, but then there's a risk of letting this become a standard formula, which can become boring. A wide-angle view also runs the risk of distortion for close objects and of empty, useless image space occupied by floor and ceiling, so these may influence where you place the tripod and camera. They may also be the reason for rearranging furniture and some objects if that's possible. In particular, recognizable shapes close to the camera and near a corner of the frame will distort. Additionally, it's worth considering how the room "reads" in terms of visual shape and what frame format will suit it best. Some interiors, for example, work well as panoramas, and a widescreen frame shape has the advantage (usually) of cutting down on

the floor and ceiling.

Lighting is also extremely important, and if you have full access whenever you want, there's a considerable choice to be made. Most interiors combine daylight from windows with their own artificial lighting, and the balance between these depends on

Executing An Interior Shoot

1. Choose viewpoint and coverage.
2. Decide on balance of lighting between window daylight, room lights, and photographic lights.
3. Select lens, set up tripod, and fix camera.
4. Rearrange furniture and props as necessary.
5. Calculate required depth of field and associated maximum aperture.
6. Set up lights, reflectors, and flags, if any.
7. If using 32-bit HDR, shoot exposure sequence starting with shortest.
8. If shooting pan-and-stitch, pan and repeat as necessary.
9. If possible, download and do a test process to confirm there are no mistakes that need to be corrected onsite.

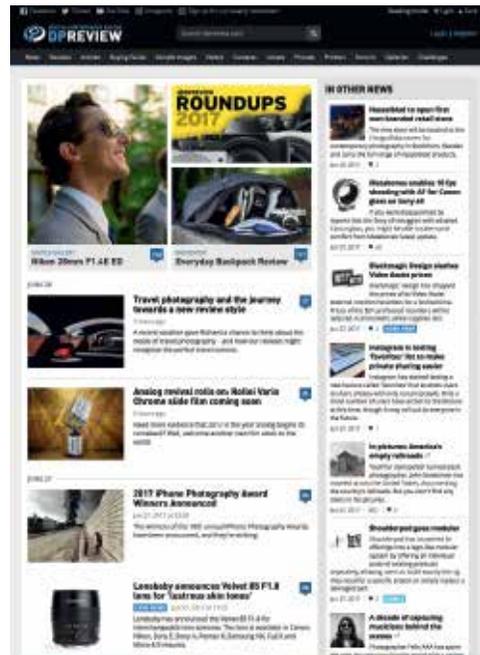
Resources

The huge surge of interest and participation in photography over the last decade internationally means that there is no shortage of resources to help you, from the technical to the aspirational.

These resources basically split into information, teaching, association, and exhibition, as I'll explain below. The media has also broadened hugely, which gives us all more choice, but also less certainty. Print publishing, both books and magazines, remains core. One reason is control over picture quality, another that it's often faster to flick through a book and find what you want than scroll through on-screen pages, and a third there is the physical, tactile pleasure of handling books. Also worth bearing in mind is that print publishing is costly and needs organisation, so you can be fairly confident that what you're reading is accurate and worthwhile (it's a competitive market). This isn't true of the internet. The wider online world is now plagued by fake news, and the photographic equivalent is inaccuracy, misinformation and uninformed opinion. Unless the website you're looking at is from a known and trusted organisation, treat its contents with caution, and double-check elsewhere if you're searching for hard information.

Information

Books like this are a basic source of trustworthy information (well, he would say that, wouldn't he), as are magazines like *N Photo*, *Amateur Photographer*, and *Photo District News* (which have online presence also). Online, DPReview is the established camera review site, while quality manufacturers like Manfrotto, Zeiss, Nikon, Canon and Sony, all have technical information sections.



Teaching

Skipping over full-time university and college courses, there are many online study-as-you-please courses. The problem is reputation, because anyone can set one up and give it a convincing name (photography isn't exactly the medical profession). Look for accreditation and for student reviews, as well as checking who exactly the tutors are. MyPhotoSchool from learningwithexperts.com is one of a number of reputable online courses. Other possibilities for teaching are workshops and private mentoring. In both cases, research the individual photographer offering them—does he or she have a reputation, and are there good reviews?

Associations

There are forums, groupings and formal associations to suit every taste, and being a member of a like-minded group of photographers allows you to exchange ideas and information, and often to comment on each others' work (which may or may not be a good idea). 500px and Fstoppers are two popular communities with a reasonable standard. For professionals, communities such as EPUK concentrate solely on business matters, not aesthetic judgments.

Exhibition Book

Getting your work seen widely by others is a basic goal for most photographers, and there are platforms for this. At the same time, I can't stress too strongly how important it is to keep looking at other people's work across a range of photographic subjects, themes and styles. It will help you form your own opinions, and give you a sense of what's going on in the photographic world. The big issue, however, is who does the curating. In the physical world, major museums like Tate Modern in London and MoMA in New York are totally reliable, as are galleries with established reputations like the Photographer's Gallery in London. Online, LensCulture has firmly established itself as a site that shows the best and most interesting of contemporary photography—and it invites entries from everyone. Some newspapers have solid photography sections online, notably *The Guardian*, *New York Times*, and *Washington Post*. Beyond this, photo competitions can have a wide reach and also offer prizes, but beware that many are unfortunately just cynical ways of collecting your entry fee. Sites like photo competitions.com show what's available at a reputable level