

CHOOSING A CAMERA BY MICHAEL SMYTH UPDATED 2013

Chances are if you have been looking for a camera to buy, you have been overwhelmed by the choices available. Here we provide an outline of the different camera types and the pros and cons associated with each choice.

When looking at a camera purchase, there is no "right" or "wrong" choice. There is, however a "right" camera for your purpose and you should think long and hard before purchasing a camera specifically for travel or any other purpose. You should also bear in mind that with compact cameras particularly, the price of the camera will be at its maximum when the model is new, declining as the model ages (usually 6-12 months) and finally is at the lowest level just before it is superseded. If you are not concerned about having the latest model, it is quite possible to save substantial money by buying a near superseded model.

If you are a serious amateur, you are most likely going to want to look at a **DSLR** (Digital SLR), a CSC (compact system camera, also called "mirrorless" system cameras), or a large sensor compact. The lines between types, models and in particular, pricing has been blurred considerably in recent times.

If your emphasis is more on travel and less on photography, one of the other options may be a better choice for you. If you are prepared to offset compactness and light weight for superior performance, a more advanced camera type may be a better than a bare bones compact.

As with almost everything, you get what you pay for. There are however, better choices within each camera type. As camera types and ranges are changing considerably, we suggest you look carefully at reviews and comparisons. We recommend www.dpreview.com as a good source of reliable information that is kept up to date. Check local and online retailers in your area for current pricing.

Overall, we have simplified the types of cameras into the following types and sub categories:

FIXED LENS CAMERAS

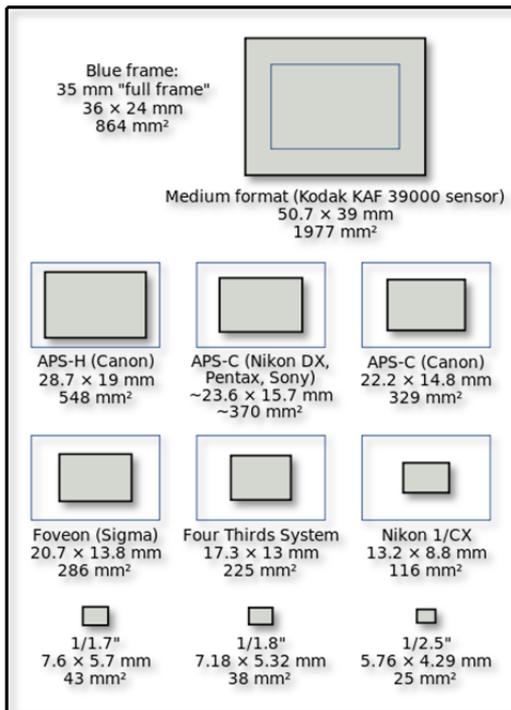
- Ultra compact and compact – small sensors and compact, short zoom range
- Bridge cameras – SLR type with extensive zoom range
- Large sensor compacts with fixed lenses

INTERCHANGEABLE LENS CAMERAS

- Mirrorless system cameras – with or without an optical/electronic viewfinder
- Compact and midsize DSLR cameras – with "APS-C" sensors (Nikon DX format)
- Full frame DSLRs

We will look at each type in turn and briefly outline the advantages and disadvantages of each, as well as offering some preferred uses:

SENSOR SIZES COMPARISON



Here is a comparison chart showing sizes of sensors used in a variety of cameras.

Why is this important ?

The larger the sensor, generally the better the image quality and the lower the amount of noise that is inherent in the image capture process.

Compact camera sensors are shown on the bottom row,

Compact system camera sensors (Four Thirds System and Nikon CX) are shown on the second row,

Smaller sensor DSLR sensors are shown on the third row from the bottom and full frame and medium format sensors are compared on the top row.

Image © Wikipedia.

FIXED LENS CAMERAS

Ultra Compact And Compact Digital.



Pros: These are the most common type of digital camera and are relatively cheap, compact, lightweight and easy to use. Most compact cameras have a "macro" function that allows you to get quite close to small objects. Better models have good optical qualities.

Cons: All compacts suffer from digital "**Noise**"* at any ISO setting above normal. At higher ISO settings (often adjusted by the camera's Program setting without your knowledge) noise rapidly intrudes and degrades the image quality. An ISO setting of 400 of

higher is going to introduce visible noise into the image and will quickly render the image unusable.

***Noise** is seen as multi coloured specks in an image (particularly in the shadow areas) and a general loss of detail or graininess. See our tutorial "**Camera Basics**" for an explanation of Noise.

Compacts have limited controls and the zoom lens is restricted in size and performance to save weight and price. Generally as everything is powered, battery life is also a concern.

The zoom lens on a compact camera is often a compromise, the widest angle is usually no wider than 38mm (35mm film equivalent) which is not really wide enough for buildings or landscapes. At the other end, most small compacts have a longest focal length that is often not quite long enough to pull in the close ups that you may want.

Check the lens specifications and see what the lens is actually capable of in 35mm film equivalents. Simply putting "8 x Zoom" on a lens tells us nothing about the widest angle or telephoto range.

Ultra Compact And Compact Digital continued.

Holding a compact at arm's length (to see the image on the rear screen) at maximum zoom makes it nearly impossible to hold it steady, resulting in shaky and poorly composed images. Some models still include an optical viewfinder which makes framing and holding the camera steady much easier.

Often compacts use replaceable or AA size rechargeable batteries that have limited life, so if using a compact, always keep spare batteries handy. All compacts use a small sensor that restricts enlargement size. Forget poster prints, you may be able to print an A4 size with a really good, low noise image, but that is realistically the most you can do. See our tutorial "*Camera Basics*" for an explanation of sensor sizes, also see "*Choosing a lens for a Digital SLR*" for an explanation of focal lengths.

Compact Digital Summary

Compacts have great advantages in light weight, small dimensions and reasonable quality in good conditions. For more serious photography, especially wildlife, difficult lighting and some architectural photography, their limitations become more obvious. A good choice for a casual photographer, or as a second "happy snapper" for times when the big DSLR is just too big and heavy.

Buying tips - What to look for:

1. Image quality – check the reviews at www.dpreview.com ,
2. Look for better lens quality and the largest maximum aperture. As a quick guide, the larger the piece of glass the better the light gathering power. Long telephoto range is not a great help, a wider angle would be better.
3. Look at battery life and type of battery. If possible rechargeable Lithium Ion batteries have better life than AAs. Buy a spare battery.
4. Finally, the camera with the best all round combination of optics (lens) image quality and battery life is the one to look at first. As models come and go at a rapid rate, we recommend you consult the DPReview web site for up to date information.

All-In-One, Or SLR Style "Bridge" Cameras



Pros: This type of camera is a step up from a compact, with a larger, more versatile lens, more user controls and a fixed (not removable) zoom lens. On the better models, lens quality is very good with a zoom lens up to and above 400 - 600mm (35mm equivalent).

Some models offer a form of "Image Stabilisation" or anti shake which is a worthwhile benefit.

Cons: All-In-One cameras still use a small sensor with associated noise issues for settings above 400 ISO (as a guide).

Bridge cameras are nearly as large as the smallest of the DSLRs, but without all of the benefits. Lately the price boundary between the top end "bridge" cameras and bottom end DSLRs has pretty much merged. If you are thinking you might want to advance to a more sophisticated camera in due course, a DSLR is probably a better choice. Bottom end DSLRs however do not have all the features of the mid range models, so you may have to spend a little more to ensure you have the options you may need in the future.

All-In-One, Or SLR Style "Bridge" Cameras continued

Battery life with "Bridge" models can still be an issue (as they don't normally have an optical viewfinder and use an electronic viewfinder). As they don't have interchangeable lenses, you are stuck with the range provided by the built in lens. Some models have add on wide angle and/or telephoto lenses, however these are often bulky and fiddly to install. If you are going to all that trouble, why not go for a DSLR and make use of the extra features ?

BRIDGE CAMERA SUMMARY

Bridge models try offer the best of both worlds, having relatively compact dimensions and lighter weight than DSLRs, with some of the features. Better models have relatively long telephoto zooms with good optics, however, without an optical viewfinder the electronic viewfinder can be difficult to use and can blow out in bright conditions. Noise can still be a problem, but overall bridge models offer a good compromise between size and performance.

Buying tips - What to look for:

1. Image quality – check the reviews at www.dpreview.com ,
2. Look for better lens quality and the largest maximum aperture. As a quick guide, the larger the piece of glass the better the light gathering power. A good telephoto of around 35 -300mm is quite versatile. Look for image stabilisation – it is a necessity when using the full length of the zoom.
3. Look at battery life. Most models in this range have rechargeable Lithium Ion batteries so life should be OK, but always buy a spare battery as a backup.
4. Noise is a problem due to the small sensor. Look for the best performance overall in varied conditions.
5. Check out the electronic viewfinder. Some are reasonable, some are really bad.
6. Finally, the camera with the best all round combination of optics (lens) image quality and battery life is the one to look at first. As models come and go at a rapid rate, we recommend you consult the DPReview web site for up to date information.

Compact System and Mirrorless cameras (CSC)



Compact system cameras have grown in popularity in recent years and come in a wide range of models and sensor sizes.

Some models include a built in electronic viewfinder, others offer an accessory eyepiece and others rely on the screen on the rear of the camera.

Sensor sizes vary, popular sizes are the Four Thirds System and the APS-c or DX format. The larger sensors require larger lenses, somewhat offsetting the advantage of a smaller camera, however the improvement in image quality more than offsets the extra weight.

Compact System Cameras are finding a lot of homes with serious amateurs and professions who want a second camera that is a little lighter than a full blown DSLR, but without the loss of image quality that comes with a lot of compact cameras.

Most newer model CSC cameras offer full manual controls, RAW file capture and a wide range of optional lenses. Some models have adaptors available to allow use of DSLR lenses on the smaller body.

Compact system Cameras continued

Pros: These cameras offer full image control, interchangeable lenses, relatively compact size, excellent image quality and professional level controls and handling. Good for a quality second camera for travel and when a large DSLR is overkill.

Cons: Nearly as expensive as midrange DSLRs, CSC cameras are not as versatile in use due to the lack of an optical viewfinder. Autofocus can be slower than full frame DSLRs, especially in low light. Pricing can be an issue, however as a second camera or for the person who does not want to lug a full kit of DSLR and lenses about, they can be a good choice.

Digital Single Lens Reflex (DSLR)



Pros: These cameras offer full image control, interchangeable lenses, a powerful built in flash and loads of accessories. A good semi professional DSLR is capable of excellent image quality and can produce prints up to A2 size * (See note below)

DSLRs come with a variety of sensor sizes:

“DX” is a Nikon term and relates to the APS-C size sensors that are found in most semi professional DSLRs such as Canon 650D, D7100 etc. We will use this term to refer to this size sensor in all models, to save confusion.

Full frame sensors (FX in Nikon speak) can be found in the “professional” series bodies from Canon and Nikon (Nikon D800, Canon 5D and 1D) .

Sensor resolution has increased rapidly over the last couple of years, with the top of the heap (at time of writing) being the 36 Mp (megapixels) of the Nikon D800, with other manufacturers offering 20+ Mp sensors.

DX format sensors now have around 24Mp sensors, with even a number of “entry level” DSLRs having this size sensor.

Image quality with the newer range of sensors is exceptional and meets or exceeds that of medium format sensors of only a couple of years ago. Full frame DSLR sensors are capable of giving excellent image quality with minimal noise right up to 6400 ISO and beyond.

All DSLRs offer exceptional image quality and creative control. Long telephoto lenses are available up to and beyond 400mm (600mm equivalent for a DX camera) from both the camera manufacturer and third parties such as Tamron and Sigma.

The latest DSLRs with CMOS sensors have very low noise and can produce excellent image quality from a more sophisticated image processing engine.

The sky is the limit with a huge range of lenses, external flash units and other accessories

All lenses and other accessories are expensive, especially the higher quality models from the major manufacturers, however quality and reliability is rarely an issue and high end cameras are designed for hard work in tough conditions.

Digital Single Lens Reflex (DSLR) continued

Cons: Heavy and bulky. If you are going to carry your camera with you a lot, you will need to be selective in your choice of equipment. It is quite easy to end up with over 8 kgs of camera gear to lug about. This can be a major consideration when travelling or carrying equipment with you. As well as all the lenses, flashes and paraphernalia you will probably want a tripod as well. After that you will need to employ someone to carry it for you.

There are some traps in buying a "DX" format DSLR. Lenses will have an increase in effective focal length, due to the cropping effect of the smaller (than full frame) sensor. A lens labelled as a 28mm wide angle becomes effectively a 42mm focal length on a DX format camera. There are some lenses available that are designed specifically for the DX format. These are usually labelled "DX" or "Digital" and whilst they work beautifully on the DX format, if you try to use them on a full frame digital or 35mm film camera, you will not get a full picture.

DSLRs come in a wide range, from "entry level" models with limited features for around A\$600.00 (including a basic lens), up to around A\$3,500.00 for a semi pro model with lens (Nikon D800 or similar). At the high end pro models such as Canon's D1 or Nikon's D4 sell for around A\$7,000.00 (body only).

For a serious amateur, we recommend a mid to high end model, such as the Nikon D5200 or D7100 (DX) or Canon equivalent. Alternatively, cheaper full frame models are not much more expensive, such as the Nikon D600 or D800 (or Canon Equivalent)

Canon or Nikon ? Camera people are like car people, they decide early on which make they like and stick with it. They will try to convince you that Canon/Nikon/Pentax/Sony etc is the only model to consider. The truth is the major manufacturers all make very good products and the only way to choose is to study the reviews and then go to your favourite camera store and try them for size and feel.

DSLR SUMMARY

DSLRs offer the best image quality, best performance and a mind boggling range of accessories and lenses. If you are not prepared to carry the extra weight and take the time to learn the more technical aspects of photography, a DSLR is probably overkill. But if you are keen to progress as a photographer and learn the skills needed to excel in this medium, then a DSLR is the way to go. You can add extra lenses and accessories as your needs arise, so you can start with a body and lens and learn as you go.

Buying tips - What to look for:

1. Image quality is everything– check the reviews at www.dpreview.com ,
2. Look for a model with the features you need. You don't need the various "scene" modes if you are a serious amateur, all models offer "Program, Aperture Priority, Shutter Priority and Manual modes. Look for things like depth of field preview (inexplicably absent from some low end models), alternative metering modes, built in flash and an adjustable dioptre in the viewfinder.
3. Examine the lenses available for your preferred model. Some entry models lack some features (such as Nikon D3100 – no lens drive motor). Check out the lenses offered by third party manufacturers as well as the manufacturer's own.
4. Be prepared to have to purchase more than one lens to cover your preferred range. You may eventually need a super wide angle, medium telephoto, a long telephoto, a macro lens and a portrait lens. Before you buy your first lens, think about what else you may need in the future and avoid too much overlap.
5. Always buy a spare battery. Lots of use will use up your battery fast.
6. Look at the reviews to see how the camera performs. Newer models with CMOS sensors seem to have the edge in noise.

SOME FINAL THOUGHTS

To some degree, your choice of camera will be determined by the final use of the images. For web galleries, images at lower resolution are preferred, so chasing high "Megapixels" is unnecessary. Likewise if you only ever print 6"x 4" (15 x 10 cm) at a photo lab.

Choosing a Nikon D800 if you are going to only ever post images on the web, Facebook or whatever will be a serious waste of money. High Megapixel count sensors are designed for serious amateurs and professionals who will need to be able to print their images.

If you intend processing your own images with Photoshop or Photoshop Elements and plan on doing A3 or even A2 size prints, you are going to need 10-18 Megapixels on a DX format sensor as a minimum.

More Megapixels on a compact camera is not going to help you, you are going to need a larger format sensor to produce quality images. Remember, when printing larger sizes, all of the defects and noise in an image is going to be enlarged too.

* Note: Often cameras are advertised as being capable of "Poster prints". In reality, to be able to produce a good quality A3 image you are going to need at least a 10 Megapixel sensor in a DX or full frame format, uncropped to generate an A3 print at a minimum recommended resolution of 240 dpi).

IN SUMMARY

There is no right or wrong choice.

Choose the type of camera and accessories to suit your needs and budget. Be aware of the benefits and limitations of each type of camera before you commit to spending your hard earned cash on something you don't need or won't use. Always check the reviews before buying and especially look at the quality of the lens supplied as a "kit" with a DSLR body, you may be better off buying a body only and choosing the lens you really want.

We recommend the camera reviews at www.dpreview.com as an unbiased and authoritative source.

In a future tutorial we will look at the sort of accessories you may need to further your photographic journey.

See our separate tutorial "*Choosing a lens for a Digital SLR*" for a more detailed introduction to lenses, focal lengths and apertures.

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