

# GETTING THE BEST EQUIPMENT FOR YOUR NEEDS AND BUDGET

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## PART 1 CAMERA BODIES

### **Introduction:**

Buying the right equipment for your needs and budget is an important aspect of getting the most out of our photography.

Getting it right can help you improve your photography quickly.

Getting it wrong can be an expensive, time consuming and frustrating process. Particularly, if you choose the wrong equipment. Then realise you've not got the image quality you wanted and need to buy something else instead.

This article tries to summarise what I have picked up by experience.

### ***I have written it now because:***

- A lot of equipment buying will occur in the next few weeks and
- I wish I had had access to something like this to help me when I first joined a camera club.

I will start off by first looking at cameras. I will write later about lenses and camera accessories. I will also make some recommendations based on my own experience.

### **Before You Buy**

As with any major purchase decision, it is best and cheapest to start off thinking through whether or not you need another camera.

Are you using your current camera to its maximum potential?

Are there still limitations which you can not overcome with technique or other equipment e.g. filters, tripods, lenses?

### **What Benefits Will I Get From Another Camera?**

That depends to a large degree on what you are using now, what you will be changing to and what you intend to do with it.

However, if you have a typical entry level SLR bought in the last 10 years and are moving up to a more advanced /modern SLR it may be less than you expect if you are mainly showing images on the web, or entering A4 or A3 prints in club competitions.

Camera still-image quality has not improved dramatically over the last decade in the way that it did in 2000 to 2010. The improvements in resolution and exposure range are often incremental rather revolutionary.

Despite this, some newer cameras have incorporated technology e.g. flicker control that can significantly improve results taken under indoor lighting e.g. pop concerts. On the other hand, many other improvements, e.g. Touch screens, GPS and Wi-Fi offer greater convenience rather than improved image quality. Video functionality has evolved more, but these are only relevant if you shoot video.

More usefully, what we have also seen is a passing down of technology to more basic models. Most importantly, the better autofocus systems that started off in professional cameras are now available in some mid range models too.

### **Should I buy a New or Second Hand Camera?**

New cameras are remarkably well made and reliable, contain some of the latest technology and come with a manufacturer's warranty for peace of mind. If you have the money and want the latest in performance, then go for it.

New cameras also depreciate quickly because the march of technology and marketing is relentless.

This means that camera equipment is often replaced while it still has a lot of life left. Particularly because amateur camera owners tend to be a responsible lot who look after their equipment well.

This is good news for cost-conscious photographers like me. Second hand cameras can offer great value and performance if you know what to look for and where to find it.

### **Where Should I look for information?**

**Within the Club.** Find out from members what equipment they use and what they would recommend.

**Magazines.** Can be very helpful with thorough tests of new products. Remember that they may be very dependent on the advertising from manufacturers, so criticisms are likely to be muted or oblique. Often limitations are first discussed openly only when a new, more advanced model is replaced.

**Internet.** Again some sites seem more objective than others. I have found the following sites to be helpful:

- [www.kenrockwell.com](http://www.kenrockwell.com)
- [www.dpreview.com](http://www.dpreview.com)
- [www.whatdigitalcamera.com](http://www.whatdigitalcamera.com)
- [www.photographyblog.com](http://www.photographyblog.com)
- [www.cameralabs.com](http://www.cameralabs.com)
- [www.photographylife.com](http://www.photographylife.com)
- [www.dxomark.com](http://www.dxomark.com)

Customer reviews on [www.bhphotovideo.com](http://www.bhphotovideo.com) and Amazon can also be helpful

**Camera Shops.** Carmarthen Cameras is our local large retailer and arranges Open days and other events to see, buy and try equipment.

### **Where Should I buy?**

**New.** I would look at [amazon.co.uk](http://amazon.co.uk), [wexphotovideo.co.uk](http://wexphotovideo.co.uk) and Carmarthen Cameras. There are other retailers.

**Second hand.** Within the club, WPF Newsflash, [www.wexphotovideo](http://www.wexphotovideo) (It has a large selection, takes trade-ins and gives a one year warranty on most second hand equipment), Carmarthen Cameras, eBay.

### **What Should I Buy?**

Only you can decide this. I will give you some ideas based on what I would do in a variety of circumstances:

#### **Cameras**

If you want the flexibility and quality benefits of using different lenses, there are now two main options in the new market:

**Digital Single Lens Reflex cameras** (DSLRs) still offer the best value when you look at performance, lens availability and pricing. The leading brands are Canon and Nikon, with Sony a distant third. These three companies account for over 85% of this market. The main division within all manufacturers model ranges is based on sensor size. The more expensive “full frame” sensor or the much

cheaper cropped sensor. The full frame sensor creates lower levels of electronic distortions in images, so can be used at higher ISO sensitivities. This helps you photograph in either low light or when fast shutter speeds are needed. Typically by the equivalent of about 2 f stops.

**Compact System Cameras** (CSCs) are developing quickly. Sony's E mount system has overcome initial limitations and the recent A6300, A9 and A7riii offering astonishing performance. Whilst Fujifilm's X mount cameras offer excellent image quality, due to a unique sensor and excellent lenses.

**Second hand.** It is slightly different, because the CSC systems haven't been around for so long and have sold in much smaller numbers. However, Fujifilm offers refurbished cameras guaranteed at much lower prices than their new equipment.

For DSLRs the typical decisions are between Canon and Nikon and cropped sensor or full frame sensors.

I prefer Canon's colours and greater lens choice. Their best autofocus systems have tended to be only used on the more expensive models.

I prefer Nikon's built in flashes and autofocus systems. The 51-point system is particularly well regarded, with a clever 3D predictive mode to focus on moving subjects.

If you mainly shoot static subjects in good light, you are lucky. Virtually any DSLR camera with more than 12 Mp sold in the last 10 years will do.

**There are a number of good options.**

In cropped sensor cameras Nikon has three main ranges. The 3XXX, at the bottom end, the 5XXX in the middle and the D7XXX at the top. Image quality does not vary much, but you will find the higher end models more sturdy and much quicker to adjust.

The Nikon D7100 and D7200 offer much of what its more expensive full frame relations provide. Just accept that you will get noise at about 2 f stops lower ISO than full frame equivalent. On the other hand, you will get more depth of field, so your pictures will look sharp.

Canon has a very similar four model cropped sensor range structure, although with Canon the more basic the camera, the higher the model number.

If you want to shoot in lower light, then you may be better off with a full frame. If your budget is tight I would recommend Nikon D700 for its autofocus or the Canon 6D or 5D Mk II for their higher resolution and colours.

If you want to take birds or fast moving things in reasonable light, go for a high-end cropped sensor with a good autofocus system and frame rate. The Canon 7D, Nikon D7100 and D7200 are all good choices. If you have more money, then the Nikon D500 and Canon 7D Mk ii are better because they have higher shooting frame rates and flicker compensation.

If you want the best all round cameras of recent years second hand, I would go with any of the Nikon D750, D810 or Canon 5D Mk III. They all have great autofocus, image quality and more than enough resolution for club images. The D810 has fallen in price recently because of the new D850.

If you will be using the camera in bad weather and rough conditions. The Nikon D3, D4s or Canon 1Dx are the obvious choices. These have high frame rates but lower resolution than the all round cameras mentioned above, so you pay a huge premium for that durability.

### **Compact System Cameras**

#### ***Sony has two E mount types***

Cropped sensor models from A6000 on have great reputations because of their compact size, autofocus, high frame rates and resolution. Sony has supplied Nikon with sensors for some time and the 24Mp sensor in these models is the same as in the Nikon D7200. A6000s are much cheaper than their successors.

Full frame sensor models. The A7 II onwards have much better performance than the earlier models and use the same sensor as the Nikon D750. The later A7RII offers a 42 Mp sensor and superb image quality. It is about to be replaced with a A7R III and can be bought second hand for about 60% of the new model price.

#### ***Fujifilm X Mount***

These cameras have a cult following and are often favourably compared with very expensive LEICAs. They have a unique non-Bayer interpolated sensor and a range of high quality lenses that produce superb images way beyond what their 16Mp and 24Mp cropped sensor specification might suggest. The downsides are the lenses are expensive and prior to the XT1 and XT10, their tracking of moving subjects was a let down. The XT1 and XT10 were replaced last year. Now, refurbished models are available and are both great second hand buys for those who want a compact, high quality camera with a range of high quality lenses. The Fujifilm online shop has the best deals.

### ***Micro 4/3<sup>rd</sup> Olympus and Panasonic***

I have no experience of either manufacturer. This system uses a smaller sensor but both manufacturers models have had very good reviews. Although the smaller sensor increases noise, some estimates are this is only equivalent to one f stop. Offsetting this is a much smaller body and greater depth of field. The Olympus EM5 Mark II has had very good reviews. Panasonic's Lumix range is also well regarded with a variety of 16 and 20Mp sensors. Panasonic is particularly noted for video capabilities and because it is light it is used by drone users to produce high quality videos.

If you need to photograph fast moving subjects it would be worth investigating if the models using contrast (rather than phase) detection for autofocus are suitable for this purpose.

### **My Personal Choices for Second Hand Equipment**

#### ***Overall:***

- Nikon D700 if the budget is tight because of its autofocus and full frame image quality.
- Nikon D750 full frame if I had more money
- Nikon D7200 if I wanted to stay with a cropped sensor because of its Sony sensor.
- If I was going on a trip to India tomorrow and wanted to capture a wide variety of subjects well in a relatively small body, I would take the Nikon D750. If weight wasn't so important, a Canon 5D Mk III, because you get Canon's rich colour rendition and can use Canon's superb 24-105mm f4 for most shots.
- Fuji XT1 if I needed a smaller camera to go to India, for a weekend away or for a wedding.
- If I was going to Llandeusanant to photograph Red Kites
- If money was tight I would use a Canon 7D.
- If I had more money either the Nikon D7100/D7200 or Canon 7D Mkii.

## **PART II: LENSES**

I found lens choice almost incomprehensible when I first started, so I hope this helps.

I couldn't understand why there were so many lenses offered for such a range of focal lengths at such different prices.

It seemed strange too that lenses that seemed to offer more flexibility e.g. zooms, were often much cheaper than some lenses with only one focal length.

*What I have learned is:*

**Lens quality has as profound effect upon images as your choice of camera.**

The lens you use even determines the autofocus performance of your DSLR camera. DSLRs autofocus using a secondary sensor which works fastest and most accurately with lenses with a f2.8 maximum aperture. This is one reason that action and press photographers typically use lenses that meet or exceed this.

As with so many products, there is no perfect lens which will do everything for everyone. We all have to make choices about money, convenience and performance. Even then, lens performance has no single measure. For instance, sharp lens like a Sigma Art primes may sometimes be criticised for its colour rendition.

Although price is generally linked with performance, the more expensive lenses aren't always the best or most appropriate choices.

The best value for money is generally from third party made lenses which are available for most camera bodies. Third party lens manufacturers are sometimes better performers than the camera manufacturers' own lenses. Sigma has improved dramatically in quality with its Art range of lenses. Both Tokina and Tamron, Sigma's main rivals, are starting to do this too.

Your lens choice is dictated by the camera system you own. This is because each camera system has a different mount. With the minor exception of Canon EF mount lenses on Sony E mount cameras, you can not effectively adapt lenses onto other camera makes whilst retaining autofocus.

Although some lenses can be used on both full framed and cropped sensor cameras, they have different magnifications at any focal length because of the two different sensor sizes. A 35mm lens on a cropped sensor camera will have a similar angle of view to a 50mm on a full frame body.

**The focal length of lenses** is still expressed for full frame cameras. If you mount a camera sold for a full frame body on a cropped sensor body, you will get about 1.5 times more magnification. So the image taken by a 100mm lens on a cropped sensor body will look like an image from a 150mm lens on a full framed body. This is great for long distance and macro work. The reverse is true for wide angle images, meaning that cropped sensor lenses have to have much shorter focal lengths e.g. 10-18mm, to get the same field of view as their full frame 16-35mm equivalents.

**Full framed sensor camera lenses** typically cost more than purpose designed cropped sensor equivalents. This is because they need bigger optical and mechanical components. They may not be the best buy if you do not intend to use full frame bodies. Some purpose designed cropped sensor lenses are actually better performers than their full frame equivalents. This is because they were designed later. A good example is the Nikon 35mm 1.8 which is optically much better than the full frame 35mm f2.

**Letting in more light** costs a lot of money. The more light a camera lens is capable of letting in (expressed as a low minimum F stop number e.g. 1.4), the more expensive it is. Canon's 50mm 1.8 costs only about 1/10 of the Canon 50mm 1.2. The 1.2 allows 4 times as much light in.

**Prime lenses**, (Lenses with a single focal length), generally will offer better optical performance than zooms. Changing lenses can be time consuming and not practical in adverse weather conditions e.g. dust on a safari.

**Zooms** offer greater flexibility than primes, but typically cost more, have smaller maximum apertures and are less good optically, with distortion increasing at the wide and long ends of the range. The wider the zoom range, the more this applies. The classic high performance zooms from Nikon and Canon e.g. 24-70 and 70-200 only have 3 times zoom ranges for this reason.

**Image stabilisation systems**, now built into many lenses, will improve the quality of images of static subjects taken in low light when you can not use a tripod. Unfortunately, they do also come at a higher cost. The Canon 70 200 f4 is available in both stabilised and non-stabilised forms, with a price difference of almost £400.

Manual focus lenses can offer high performance at lower cost than their autofocus equivalents. This is notably true for wide angle and macro applications. Samyang make highly regarded lenses of this type.

## **What Should I Buy?**

Most people start off with the kit lenses which are packaged as low priced add-ons to camera bodies. Nikon and Canon's 18-55 and 18-105 18-140 lenses are all reasonable performers, but are often stepping stones to other lenses as our interest increase.

## **Which lenses should I go for next?**

Firstly, you need to decide what subjects you want to photograph.

**Insects and flowers** are best taken with specialised macro lenses which focus to short distances. 90 or 100mm lenses are good choices, but the longer, more expensive 150-180mm macro lenses perform best, because you can stand further away from wary creatures. Macro lenses are normally optically strong performers. But they are slow to focus so are not ideal for longer distance action.

**Wide angle lenses** fit in a lot, so are viewed as good for buildings and landscapes. They are prone to distortion, so people in them can look strange and buildings lean inwards. Using a standard lens to create a stitched panorama is a viable alternative.

For people anything from 35mm to 90mm should work because the distortion levels are quite low in most lenses in this range. The most commonly used specialised **portrait lenses** are 85mm for full frame cameras (about 56mm on a cropped sensor).

**Zooms** are more commonplace in these focal lengths. Tamron produces a high quality 17-50mm 2.8 lens which is very useful range for cropped sensor cameras. Most constant aperture f2.8s 24-70mm lenses are expensive, but high performers, well suited for action. The smaller aperture f4 24-105mm from Canon is very popular with full frame users because it offers good quality and a usable focal length.

Zooms now dominate most longer focal lengths. The most common range is 70-200mm. If shooting fast action is vital go for a f2.8, for anything else the f4 options are cheaper and lighter without compromising image quality.

For **birds and planes** in flight, longer focal length lenses are preferable. 300mm is the minimum and 400mm or more is better.

There has been an influx of well regarded, affordable, third party 100-400 and 150-600 lenses in recent years. **Sigma and Tamron** both have good, relatively affordable, models.

The ultimate in **long lenses**, remains the Nikon and Canon 500 f4 models because they produce clear images in low light or with high shutter speeds. They still can't overcome the effects of atmospheric distortion and haze at distance. These both cost several thousand pounds. Even Sigma's recently introduced equivalent is £5000.

## **What would I buy?**

### **Cropped Sensor:**

#### **Canon**

Canon has the largest range of lenses of any manufacturer. Look for either an Efs or EF model.

- The 18-55 IS STM and 18-135mm IS STM are good kit lenses.
- The Canon 10-18 IS or Tokina 11-16 f2.8 are good wide angle lenses.
- The 100mm 2.8 IS macro and 70-300 IS II are both good buys for these cameras.

Other telephoto lenses are listed in the full frame section that follows:

- Full Frame
- Wide angle Canon 16-35mm f4
- Walk around Canon 24-105 IS STM or 24-70 f4 or 2.8ii
- Prime 50mm 1.8 STM
- Macro 100mm IS macro
- Telephoto
- Canon 70-200 f4 I is or 70-200 2.8 is II
- Canon 100-400 IS L II
- Canon 300mm f4

#### **Nikon**

Nikon's lens range is similar to Canon's

- Cropped Sensor (DX)
- Kit Zooms 18-55 VR, 18-105 VR 18-140 VR
- Wide angle Nikon 10-20 or Tokina 11-16
- Prime Nikon 35mm 1.8 DX G
- Telephoto: Nikon 55-200 or 70-300 VR

## **Full Frame**

- The “Holy Trinity” of 14-24, 24-70 2.8, 70-200 f2.8 is expensive but great.
- The Nikon 16-35 f4 is a more practical wide angle.
- Nikon's 24-120 is not as well regarded as Canon's 24-105 so many Nikon users buy the versatile 28-300 G instead.
- The 70-200 f4 and f2.8 are excellent
- The 300mm f4 is a good buy because it has been around for a long time.
- The 80-400 is good but expensive.

## **Third Party Lenses for both systems:**

- Sigma 's Art 20mm, 24mm, 35mm, 50mm, and 85mm f1.4s primes have received very strong reviews.
- The 100-400 C and both 150-600 models are strong telephoto performers at moderate prices.
- Tamron's 15-30mm wide angle and 24-70 stabilised f2.8 has been well received because of strong performance at lower prices than Canon and Nikon's equivalents. Tamron also has a new 100-400 out soon.

## **Fuji X System**

Although the choice is very limited, with only Fuji producing autofocus lenses for its cameras, most of its lenses are well made and of high optical quality. The 10-24 wide angle, 18-55 f2.8-4, 35mm f1.4 and f2, 56mm f1.2, 50-140 f2.8 and 100-400 are all excellent, if expensive, lenses. The 55-230 zoom is a plastic bodied bargain in this range.

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External Competitions Secretary

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