

Digital Photography in Archaeology

A Basic Guide

Guide 12



BAJR Practical Guide Series
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Introduction

Many of us now use Digital Cameras in place of 35mm and are expected to be able to use them, relying on the automatic setting to get the photograph we need. However certain conditions require more than just point and click. This short guide is to give a rough guide to 6 conditions where manual settings are more appropriate and will help you understand more about how to take photographs in general.

The 6 settings we will discuss are:

1. Landscape and “general shots”
2. Keeping the feature in Focus
3. In the dark
4. Using Flash
5. Maintain the colour
6. Close-up finds shots

This is **not** a **comprehensive** guide to site photography, but is intended to allow anyone to take decent photographs with the minimum of knowledge. It should also be seen as a starter for those who want to take it further, as like anything, a grasp of the theory allows more comprehension of the ‘why’ and ‘how’ that is never available in the age of automatic settings and software fixes.

1 - Landscapes and General Shots.

Often you are required to take general shots of either the site or trench or the surrounding landscape. It sounds easy and an automatic setting should take care of most situations. But many shots have subjects that are both near and far from the camera – the trick is to have it all in focus. Too often either the background or foreground are slightly blurred. To sort this you will have to increase your [depth of field](#).

To adjust depth of field you will have to be in [Aperture Priority](#) mode. This is set by turning the dial to **A** or in the case of Canon models **AV**.

Now you can change the f-number, often by scrolling a dial or using up/down buttons. You should be able to see the [f-number](#) change on the screen.

A large [f-number](#) i.e f16 creates a large depth of field where subjects both



1-This shot has both the foreground subject and the background in sharp focus

near and far will be in focus. Choose the largest available which will be anything over f8 or even up to f16. (or f32 if your camera has such a setting)

You can also get a wide [depth of field](#) by zooming out to the [widest angle](#) your camera can go and then add to that a high [f-number](#) will ensure a maximum range in focus.

NOTE :

Large f-numbers close the hole in the lens, letting in LESS light. The camera must then compensate by taking a longer exposure, which can in turn increase the risk of camera shake.

The higher the f-number the steadier you must hold the camera. Tripods are cheap light and useful in many situations.

2 - Keeping the feature in focus.

How often do you take a photograph of a feature but end up with a shot that makes it difficult to work out what the centre of attention of the photograph is supposed to be? This is where we can steal a trick from portrait photography.

TIP :

The closer you go to the subject, the less Depth of Field you will get and the further away, the more Depth of Field will be obtained.

The process is in essence the opposite of the previous technique. You want to have the specific subject of your photograph to be in clear focus while superfluous background is out of focus to dramatically highlight the subject.

To adjust the [depth of field](#) you will once again set the camera dial to **A** or **AV** (Canon) Now you can change the f-number, often by scrolling a dial or using up/down buttons. You should be able to see the [f-number](#) change on the screen.

Different cameras often have different available [f-numbers](#), the rule is the same. Small numbers i.e. f2.8 create a short depth of field where only the main subject is in focus. So to ensure the feature (whether that is a cut or an architectural element) is in sharp contrast to the background, choose an f-number such as f2.8 – f5.6. If you have a 'portrait mode' you could also try to see if it gives the results you need.

You can also reduce the depth of field by zooming in on the feature (only ever use the optical zoom – do not use digital zoom!) and then standing backwards (sounds daft... zoom in and then step back.. but the results are worth it) Or, move closer!



2 - The merkat-cross head is in focus and the background is slightly out of focus, which highlights the subject.

In the dark.

Poor light can often ruin most photographs, and you may find yourself in situations where poor light is your worst enemy. Either inside a building, a tomb chamber, or even in a deep (and of course shored) trench. So how to achieve the best results? There are several professional ways to achieve it, but for this guide here is the simple solution.

TIP :

Digital cameras often autofocus on whatever it is pointed at, so if the feature you want to highlight is off centre there is a way to ensure that the focus remains on it. Centre on the feature and half depress the shutter button, and you will hear the camera focus. Now while remaining half depressed, move and recompose the shot, before finally fully depressing the button and taking the photograph.

For best results, set your camera to [Manual](#) mode, which is normally done by rotating the dial to M on the camera. Now you are able to alter and set the f-number and the shutter speed.

To let in the maximum amount of light you should select the smallest f-number available (f2.8 – f5.6) and then choose a low shutter speed. This setting will very much depend on the

conditions and you may have to take several pictures to achieve the desired result. (one of the beauties of Digital Photography)



3 - This highlights the two problems of low lighting and light glare, with automatic settings unable to cope with the situation.

.Try 2.5 seconds to start and then step up or down the shutter speed to find the best – experiment and find what works, you can afford to take the photos and also you will soon know just the right setting for the situation without thinking.

TIP :

If your camera has no fully manual mode, you can get a similar result by just switching the flash off in Automatic mode. This will force the camera to a longer exposure than the 1/60th of a second that is normal for flash shots. Remember you are looking for exposure over 1 second.

Cameras indicate seconds by the " symbol, so 4" is four seconds (*you will see the same usage in survey - 340° 14' 45" is 340 degrees 14 minutes and 45 seconds*) .

It is impossible to hold a camera still for this length of time so a tripod is essential, however you can make a stable platform out of many other items. A set of level legs or a bucket with a scarf or gloves used to balance the camera will do just as well. Ensure you do not have the strap in the way and also that none of the bucket or gloves get in the shot.

Unless you are completely in the dark, and can light the scene with a hand held flash – turn **OFF** the flash. Cycle through your flash options until you have a symbol that shows a lightning flash with a line through it – this ensures that the flash will not operate.

If you are having difficulty in auto focusing you will have to set the camera to Manual Focus. (you may have to read the instructions to see where to do this, but often it is a switch between **AF** (Auto Focus) and **MF** (Manual Focus) and then set it to infinity (∞) or measure the distance and set it to the relevant distance. (if your lens has manual settings marked on the barrel. A lot of modern lenses don't have them which is a pain)

To ensure you do not shake the camera when you press the shutter button, put it on self-timer, with cameras often having a short and long timer – which can also give you enough time to 'escape' from the shot as well. Or use an infra-red remote control unit, if available

Using flash.

When to use flash and when not to can often confuse people. You have seen in the above examples the way to force settings by turning off the flash, but what about when you should use a flash?



4 – A flash exposure of 1/60th illuminates the wall, but does not stop overexposure from the daylight.

If you have a lot of brightness in the background (a very sunny day or backlit scene you can often end up with the camera influenced by the brightness in the background and the foreground features are underexposed.

To ensure the feature is also visible you must force the flash to operate (which does sound strange if you are taking a photograph on a sunny day) To do this (you may have to check your manual) but alter the setting so that the lightning icon is visible on the screen. The flash will now go off regardless of the conditions.

TIP :

A normal flash has a range of only a few metres, but will still add much needed light to a foreground subject, even on a sunny day.

Now that the flash will take care of the foreground it is time to optimise the background. During the day it should be possible for the auto mode to achieve the correct results, but you may still want to adjust the exposure setting (see *Maintaining the Colour*) and the same is true if you are photographing in a dark room with light coming in from windows or doors.

This technique is useful to ensure that the lighting of your photograph is consistent, and is known as Flash Fill.



5 – A near perfect flash fill, both the wall and exterior are balanced for exposure. The camera was set on a tripod on a 1/250th second exposure (for the background) and a forced flash fill on the foreground) Note also the reuse of the technique seen in section 2 – where the foreground (the subject) is in focus, while the background is slightly out of focus! - Sorry about the car though... sometimes you have to take your time and wait for the right moment.. Even if it takes hours!

Maintain the colour

Photos can often end up looking washed out and the automatic mode will judge the colours of a scene incorrectly thus over exposing it. What we will try to do here is force the camera to underexpose.

TIP :

Whenever you change your settings manually, always remember to return them to default values. Turn flash back on, reset manual focus to automatic etc.

If you forget to set the EV back to zero, all your photos will be either too dark or washed out.

Virtually every camera has the ability to under or overexpose. This is called exposure compensation and is indicated by a square icon with a + in the top corner and a – in the lower corner. +/- . Pressing this button will normally bring up a scale running from -2 to +2 EV, and using either a dial or buttons you can choose the setting you want.

A setting of -1 will halve the exposure (making it darker) a setting of +1 will double the exposure (making it brighter). Experiment on the same subject to see the effect.

This is one of the few techniques that can be replicated using photo software on your PC. Most washed out photographs can be 'corrected' by utilising image editing software to **increase** the contrast and the colour saturation whilst **reducing** the brightness.



6 – Washed out, sun blurred, foreground too dark – yes....that's the automatic mode.



7 – Compensating for the sky is not going to help, neither is a flash fill for the foreground...



8 – I would say that's just about perfect.. The colour is good, both the sky and the church are sharp and with the correct exposure, the foreground is pretty good too. Add a decent framing of the subject and it is clear, focused and properly exposed.

Close-up and finds shots.

Most digital cameras can take amazing close-up shots and details, however you must tell your camera what you are doing or it will end up with out of focus shots.

To prepare your camera you must enable Macro mode (some cameras also have a super macro for incredible detail). This is normally achieved by moving a dial or pressing a button with the icon of a flower (or a flower and magnifying glass for super macro)

Now all you have to do is get close to the subject a photograph it. Once again although not essential I would recommend a tripod and use a short self-timer to ensure no camera shake.

Take at least two photographs, one with and one without a centimetre/millimeter and chroma scale. (see appendix) Keep the background neutral, such as beige or light blue and ensure an even light, whether this is achieved by using sunlight – or you can also use a daylight lamp (a SAD lamp is perfect), which provides a bright but even light.



9 – Nice arrowhead, but useless photograph.



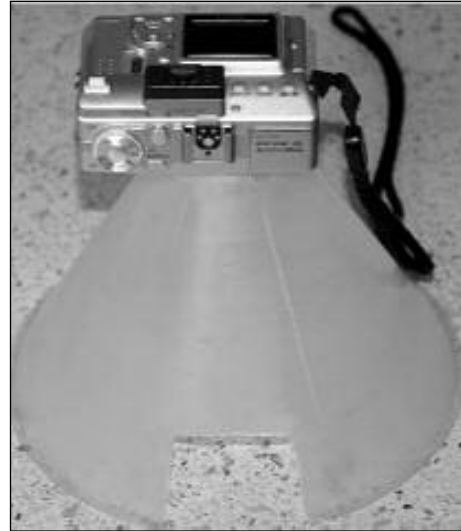
10 – Everything nice and sharp, a good scale – though the background could be better, though the neutral tone is good. You could cut yourself on this photo it is so sharp.

Close-up finds shots – A homemade solution

As digital cameras can take amazing close ups why not enhance your shots with this homemade diffuser set-up which costs only a couple of quid and a ½ hour to make..

The only thing you need is a half decent digital -camera with a good macro ability.

Now buy yourself a large funnel, (preferably white and semi-transparent) then after you have measured the width of your lens cut off the spout so the narrow end of the funnel is a little larger than your lens (see photo on right).

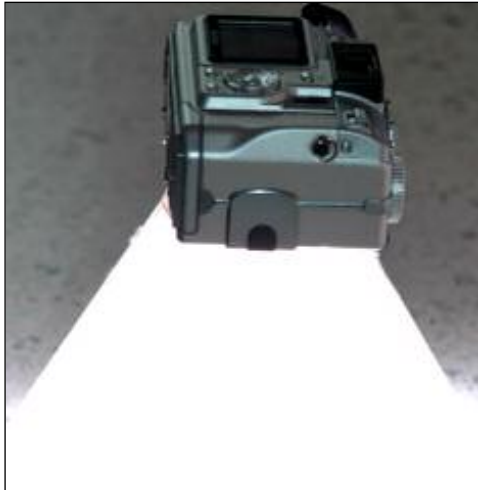


Now cut the new funnel length (*from the wide end*) to that of your camera's macro distance (*it is critical you get this correct*).

WARNING :

ensure that your lens does not foul the funnel when you power up, You will seriously damage your camera...

Now you have a stable camera keeper complete with built in macro spacer, a built in light diffuser and a stand to keep your camera square to the subject.



This now gives us the ability to take photographs using long exposures and so small **f-stops** (especially useful when taking photographs of three-dimensional artefacts).

Always try to use daylight, avoiding flash wherever possible.

If you have a badly worn coin try using an ordinary hand torch (diffused), keeping it low down to apply a low raking light across the coin (this is best done in darker conditions).

Try using backgrounds that are marginally different (blues/greens) from the subject, which will not confuse the camera's auto exposure system. (If you are not brave enough for fully manual)

You can post process your image through a software program, to add a little more contrast/brightness where necessary.

Summary

This should now equip you with a basic knowledge to deal with various situations. But this is only the beginning and books and guides are available to help you take it further if you want. One useful side of Digital Photography is being able to see the results of your settings immediately. This can also be translated into helping to take perfect 35mm photographs.

Once you have achieved the photograph you want with the digital camera, it is easy to then set your 35mm camera to the same settings that were successful on the Digital Camera. The more you understand how different settings affect the final image, then you will be able to experiment and take better pictures in general.

Many people are put off by f stops, apertures, exposures and the like. But once you use them in different combinations you are well on the way, no longer a happy snapper but a photographer.

Books

- | | |
|--------------------|---|
| Conlon, V M | Camera Techniques in Archaeology |
| Dorrell, P. | 'Photography in Archaeology and Conservation' (2nd edition, Cambridge University Press, 1994) |
| Grey, Tim | Color Confidence: The Digital Photographer's Guide to Color Management |
| Harp, Elmer | Photography in archaeological research |
| Howell, Carol L. | A Practical Guide to Archaeological Photography (Archaeological Research Tools) |
| Schlitz, M. 2005 | 'Archaeological Photography' in <i>The Focal Encyclopaedia of Photography</i> , Fourth Edition, Elsevier Inc. Massachusetts |
| Simmons, Harold C. | Archaeological Photography |

Sites

Advice on all digital imaging issues.

<http://www.tasi.ac.uk/index.html>

archaeology and photography - Michael Shanks

<http://metamedia.stanford.edu/projects/MichaelShanks/943>

Dave Webb's gallery of Diggers

<http://www.archdiggers.co.uk/diggers/frameset.html>

Scales

Photo Scales & Scene Marking Devices.

<http://www.crime-scene.com/ecpi/references.shtml>

BAJR recommends Dave's Photographic Scales.

Photographic scales for use in Archaeological Excavations, Artefact Recording and Museum Display Work.

The scales range in size from 500mm down to 10mm.

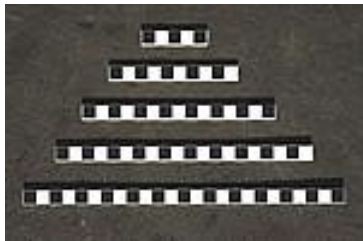


A set of Round or Flat Red & White Scales marked off in 100mm sections in the following sizes: 500mm, 400mm, 300mm & 200mm.

A set of Black & White 10mm width scales marked off in millimetres in 12 different sizes: 250mm, 200mm, 150mm, 100mm, 75mm, 50mm, 40mm, 30mm, 25mm, 20mm, 15mm & 10mm.



A set of Black & White 10mm width scales marked off in alternate 10mm black & white squares in the following sizes: 250mm, 200mm, 150mm, & 50mm.



A set of Black & White 20mm width scales marked off in sections of 50mm alternate 10mm black & white solid squares with alternate 50mm solid white sections in the following sizes: 250mm, 200mm, 150mm, 100mm & 50mm.

All the above Black & White scales are Silk Screen Printed and can be obtained in either 1mm or 3mm thickness.

A set of Black & White North Directional Arrows consisting of 2 sizes:

40mm wide X 250mm length, & 20mm wide X 200mm length.



For all prices and any further information please ring 01903 718820 or e-mail; davecudmore@talktalk.net

And mention BAJR