

A Ken Rockwell Publication

Nikon D300 User's Guide

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Your honesty (I send no receipts) lets me keep writing guides and providing easy downloads, instead of having to use a complex pay-before-play system.

(If you got your D300 through my website links or have made a previous contribution, you've already paid. THANK YOU!)

Nikon D300 Users Guide.

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See the online version of this document at

www.KenRockwell.com/nikon/d300/users-guide

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A Word in Advance

I support my growing family by publishing these guides. I hope you'll find them useful.

If you've already done your share to help by getting your equipment through my links at www.kenrockwell.com/links.htm or helped otherwise, please enjoy this PDF version of my User's Guide.

Others charge far more for guides like this. If you haven't helped yet, and wish to save or print this file for personal use only, I expect a donation of \$5 per copy made to the "Make a Donation" link towards the bottom of each page of the free-to-read-online version at www.kenrockwell.com/nikon/d300/users-guide.

With the honesty of great people like you I can continue to offer these online for everyone's benefit.

Thanks for reading!

Ken
San Diego, California
October, 2008

Introduction

This Guide will make you an expert and teach you every possible nuance of using the Nikon D300. It includes lots of tips, tricks, secrets and the settings I prefer to use. It does **not** include my examples, photographs and general information – for this, you will have to visit specific pages on my web site. Links to those pages are provided throughout this Guide.

This Guide alone will not help you take great pictures To get great photos you will still need to get yourself to the right place at the right time and point the camera in the right direction, which is a lot harder than mastering the D300. Right out of the box at its default settings, the D300 does a great job.

Making a great photo involves knowing what makes a great photo, knowing how to get great exposure, knowing when to use the D300's adjustments, knowing how to get great color, locations, timing, patience and a whole lot more. I cover these and other general photography issues at <http://kenrockwell.com/tech.htm>.

My quick guide to great D300 photos

Getting great photos out of the D300, or any other camera, really only takes about two settings and a good eye:

1. Take a picture. Look at the rear LCD. OK? You're done. If not ...
2. Too light or dark? Change the Exposure Compensation (*Top Controls*, page 20) and shoot again. OK? You're done. If not ...
3. Colors not right? Adjust White Balance (*Top Controls*, page 14) and try again. OK? You're done. If not ...
4. Contrast, saturation or other fine points not right? Adjust the Picture Controls (see article starting on page 79). OK? Great! If not, you're either not at the right place, not at the right time, or looking in the wrong direction. It's never your camera's fault.

That's it.

For more examples of changes to these settings, also see my "Teaching" galleries on my Gallery page at <http://www.kenrockwell.com/gallery.htm>

Some of my favorite secrets, which I cover in detail throughout these pages, are:

Secret	Page
Getting wild colors	79
Auto ISO	39
Instant high magnification zooming with the center thumb button	60
Inserting your © and contact info automatically into every file	70
Using the dials to scroll among images	66
Getting useful histograms	28
How to use manual focus lenses	72
How never to shoot without a CF card	66

While almost everything about the D300 is included here, the best way to get additional help is by using the Search feature (see below) on my web site. You can search for D300 topics and a host of other subjects.

Searching for help

Looking for a specific control? Use my web site's Search feature at <http://www.kenrockwell.com/>. Be sure to mention the D300 in your search.

Want free live phone support? In the USA, call (800) NIKON-UX, 24 hours a day, 365 days a year.

Enjoy the Guide!

Camera Settings

I leave most settings at their defaults. Here's what I do each time I pick up my D300.

FORMAT

Always format your card after you put it in any camera, or if you've connected your camera to a computer. For information about formatting, refer to *Top Panel Controls* on page 3.

Formatting your card(s) ensures any folder or file corruption acquired anywhere goes away.

You can shoot without doing this, however constant formatting is good practice and should eliminate ever having any card errors. Be sure you've downloaded and backed up all the files in two different physical locations before formatting.

Reset

I reset everything every time I use my camera, much as a pilot uses a checklist before every flight to prevent any switches from being in the wrong position. When I don't check first, I find I have often have left my D300 in some screwy mode, like 2,500K WB and ISO 3,200, from shooting in the dark the night before.

Nikon has an easy reset feature. I use it every time! My standard operating setting is only three clicks different than the Reset defaults.

My checklist is therefore Reset, Basic, Medium, and A3. Allow me to explain:

Find the two green ● dots on the QUAL and Exposure (+/-) buttons on the top of the camera. Hold them both down for a few seconds. The LCD blinks and everything is back to normal.

I do this every time I use my D300. If I forget, I may have the resolution or White Balance or ISO or God knows what set to something screwy and spoil all my shots. I'll see WB problems on the LCD, but I won't notice if I left my D300 at ISO 3,200 or SMALL image size from the night before unless I look very carefully. That's why I always use RESET and set from there.

Reset leaves the detailed menu tweaks alone and is smart enough to reset only the big dumb things I might have moved overnight.

QUALity

I use Large (or Medium), JPG, BASIC, Optimal Quality Mode (*Shooting Menu*, page 33).

Reset brings you to NORMAL JPG. Once I've reset, I immediately change to my preferred QUAL setting: BASIC. Do this by pressing the QUAL button on the top and spinning the rear dial one click to the right. This shows as L and BASIC on the top LCD. L stands for Large image size (4,256 x 2,832 pixels) and BASIC for basic JPG compression.

For most people and family pictures, 12MP is way too much. 12 MP makes great 20" x 30" (51x76cm) prints. 6MP is enough even for great 12" x 18" prints, so I usually shoot at M image size (3,182 x 2,120 pixels). To change the image size, hold the QUAL button and move the front dial one click to the right. You'll see the L change to an M on the top LCD.

I use a hidden menu option (unchanged with Reset) to set the JPG compression mode to Optimal Quality, instead of the default of Size Priority. Do this at MENU > SHOOTING (green camera icon) > JPEG Compression > Optimal Quality. This mode gives smaller files than NORMAL and better quality than BASIC. For details, refer to *Shooting Menu*, page 33.

ISO (pronounced Eye-Ess-Oh, not "eyeso.")

I use the default of 200, which is reset by Reset. I set Auto ISO (unchanged by Reset) to chose ISOs for me automatically. Auto ISO selects ISOs exactly the same way I would, except that now I don't have to. Auto ISO is described in the *Shooting Menu*, page 39.

Auto ISO increases the ISO automatically as it gets dark. It shoots at ISO 200 in good light, and starts ramping it up in lower light to a maximum of ISO 3,200. Only if it gets still darker will it let the shutter speed go below the preset speed. We'll set this slowest speed and maximum ISO to fit our tastes later in the *Shooting Menu* (page 39).

White Balance (WB)

White balance is how you set the color balance, and color is critical to every image.

I use AUTO WB (as set by Reset), and a clear UV filter to protect my lens.

I prefer warmer images, so I set WB towards Amber (more orange) by pressing the WB button and spinning the front dial to taste. A6 is a lot of amber, 0 is neutral, and if you want cooler, B6 is much bluer. You read this on the top LCD as you adjust it. It disappears from the top LCD when you release the WB button.

I usually run A3, but I'll use A6 in shade. It's not magic; just look at your picture on the LCD and adjust to taste. Whatever looks right is right: this is an art, not science. For examples of different settings, go to <http://kenrockwell.com/tech/white-balance-examples.htm>. To read about White Balance, go to <http://kenrockwell.com/tech/whitebalance.htm>.

Picture Controls

This is how you get your choice of wild colors or creamy skin tones. I have a whole section about this at *Nikon Picture Controls*, page 79. They work the same way for the D3, D700 and D300.

Picture Controls are how you set your D300 to give you the pictures you want right out of your camera. Learn these, and you'll never have to waste your day screwing around with raw files.

When reset, the D300 resets each Picture Control, including saved Picture Controls, back to its own default. If you regularly change any part of any Picture Control, you'll want to save it that way as its own named preset. See *Nikon Picture Controls*, page 79.

Autofocus

I have an entire page on this. See *D300 AutoFocus Settings*, page 85.

Metering

I have used Matrix for everything since I got my first Nikon FA back in 1992.

You set this on the rotary switch (*Rear Controls*, page 23) on the back. Matrix is the middle position that looks like a rectangle with a dot in the middle. I also discuss the other modes at *Rear Controls*, page 21.

I use the Exposure Compensation control (*Top Panel Controls*, page 20) if I need to lighten or darken the pictures. For more details, see my *All About Exposure* page at <http://kenrockwell.com/tech/exposure.htm>.

Lens Settings

Many lenses have no switches or settings. If so, don't worry.

If the switch says "M/A - M" then use M/A. This gives autofocus, and if I grab the focus ring it instantly lets me make manual corrections. As soon as I tap the shutter button again I get autofocus. This M/A setting, if the lens has it, provides both kinds of focus without ever having to move any switches. It's the best.

Older lenses may have an "A - M" switch. Leave those at "A." To get manual focus you must move the switch on the lens, and/or the switch on the camera. It's not automatic. Different lenses require different settings on the camera and lens to get manual. Some, like the old 300mm f/4 AF, required moving both the camera and lens switches! That was a pain.

Non-G lenses will have an aperture ring on the base of the lens where it's attached to the

camera. Set this ring to the smallest aperture (largest number), usually in orange and f16, 22 or 32. There usually is a lock to keep this ring set there, since if it comes off that setting you'll get an error message (which displays as *fEE*) from most cameras.

Front Controls



Front Dial

Used for all sorts of settings. You knew that. It usually changes the aperture setting.

Depth-of-Field Preview Button

The preview button lies naturally under your middle finger.

Tap this to stop the diaphragm down to the taking aperture. The viewfinder gets darker, but look carefully and you can see what's in focus or not. This is a legacy feature from film days. Today most people look at the LCD playback.

You can program this button do other things, as explained in *Custom Functions* (page 61 onwards).

FUNCTION Button

The Function (Fn) button lies naturally under your ring finger. See picture on the previous page.

I program this trick button for many different things depending on what I'm doing.

This button is programmed as explained in Custom Functions (page 61).

Flash Pop-Up Button

This is an unmarked bumpy black button. It is on the top right of the viewfinder as seen from the front.

Press it to pop up the flash.

Flash Bolt +/- Button (right side of flash hump as seen from front)

This sets the flash sync mode and the brightness of the flash. Flash brightness is more formally called "flash exposure compensation."

Press and hold the flash button and turn the front dial to change the flash exposure compensation. This sets the brightness of the flash. + makes the flash brighter, - makes it dimmer. This setting only changes the brightness of the flash. It leaves the background (ambient) exposure alone. Set it to - if your subjects are getting washed out. If you run out of flash power beyond 10 to 20 feet, then setting it to + can't make the flash any brighter.

If you set flash exposure compensation to anything other than zero, you'll see a little "+/- bolt" icon in the finder and on the top LCD. This resets when you do a "green" Reset.

Press and hold the flash button and turn the rear dial to change the flash sync mode. You'll see the mode shown on the top LCD in the box with the bolt.

Flash Sync Modes (set with Bolt button)

Select these by holding down the flash button on the side of the flash hump and spinning the rear dial. Your selection is shown on the top LCD in the box with the bolt.



Normal (blank on the top LCD)

This is the default position.

In Program and A exposure modes, the shutter won't stay open longer than about 1/60 second.

You can change this 1/60 minimum speed in Custom Setting Menu option e2 (page 57), which defaults to 1/60 second. I have mine set to 1/30. Set a longer time, like 1/8, to allow more ambient light in the photo and prevent inky black backgrounds. Set it shorter to prevent subject motion blur.

This is brilliant! In the old days we'd have to use Manual exposure to set this to a reasonable number like 1/8. The problem with using the slow mode, explained below, is that in dark locations the shutter may stay open a stupidly long time and ruin the shot. This Custom Setting lets you have the camera adjust itself automatically and stop at the longest time with which you feel comfortable.

I usually use Normal mode, since if I don't I can get some scary long exposures if I'm not expecting them in the dark.

Red-Eye (eyeball icon on the top LCD)

I never use this. It shines an obnoxious light in your subject's eyes for a couple of seconds and then releases the shutter after you've already missed the picture. Use this only if you have some people you want to get rid of at a party.

Warning: If I set the Red Eye mode by accident it bugs the heck out of me, because the camera doesn't go off until several seconds after I've pressed the shutter, but I've set no self timer! It doesn't do much to reduce red-eye anyway. Skip this mode. You won't know you've set it, since there is no in-camera indication. If for some reason the shutter seems to have a weird delay, check this!

SLOW ("SLOW" on the top LCD)

This mode lets the shutter stay open as long as it needs to so dim ambient light can expose properly with flash. These exposure times can get stupid long, in which case you want to use the setting I covered under Normal.

In daylight, SLOW is the same as NORMAL, since exposure times are short. SLOW unlocks the camera in P and A exposure modes to make exposures as long as it wants to in dim light.

Have a look at most issues of National Geographic and you'll see many indoor shots made in this mode. The background exposes correctly, people may be blurred, and a burst of flash freezes them along with the blurry ghost images.

Normal and SLOW do the same thing in S and M exposure modes, since you or the camera may select any shutter speed in these modes regardless of flash sync.

The default apertures and shutter speeds are unchanged in Program mode, unlike in the D70.

Red-Eye SLOW (eye and SLOW icon)

This is the SLOW mode and redevye. I don't use it for the same reason I don't use Redeye mode.

REAR ("REAR" on the top LCD)

When you're shooting with flash and long exposures, this makes the blur come from behind moving subjects.

Normally the flash goes off the instant the shutter opens. This makes sense, but looks stupid if you have motion blur because the blurs will be in front of the moving subject. Select REAR mode to have the flash go off as the shutter closes. Now you'll have motion blurring from behind the frozen flash image, which looks great.

Another reason to select REAR is because people presume photos are made the instant a flash fires, then they leave. This wreaks havoc with long exposures, since people will leave at the beginning of the exposure! Use the REAR mode and the flash doesn't go off until the end of the exposure. You'll also want to select flash lock to eliminate the preflash. Read about programming the FUNC button to do that on page 61.

REAR doesn't do anything with short exposures. REAR also engages SLOW, but SLOW doesn't light up on the LCD until you take your finger off the flash mode button.

Trick Flash Exposure Lock Mode: You can set your FUNC button in the *Custom Menus* (page 61) to lock flash exposure and eliminate preflashes which make people blink.

Studio Flash Connector

Pop open the tethered rubber cover to connect a PC cord from your professional flash system to your D300.

PC stands for Prontor Compur, a popular German shutter back in the 1930s who invented this connector. The PC connector has nothing to do with personal computers.

Idiotic Remote Terminal Connector

Pop open the tethered rubber cover to connect one of Nikon's expensive electronic remote controls, like the \$55 MC-30 and \$130 MC-36.

Since Nikon overprices these, you can buy counterfeits cheap, but honestly, the release you buy today will last you far longer than any digital camera. I still use the one I bought back



in the 1990s before the practical DSLR was even invented. These work on just about all motorized Nikon film and digital cameras.

Sorry, but the D300 won't work with the superb pocket-sized \$17 ML-L3 wireless cable release, as the cheaper cameras can. Since Nikon knows you're a big spender with the D300, you'll have to buy the clumsy \$175 ML-3 wireless release system.

Nikon doesn't bother to thread the shutter release, so you have to buy one of these gizmos instead of a standard \$6 cable release on a tripod.

Lens Release

Push this button and turn the lens to remove it. It locks automatically when you attach and rotate a lens.

Focus Mode switch

See my complete *Guide to Setting the D300's AF System* (page 85).



Top Panel



Top left controls

Advance Mode Dial (S, CL, CH, [Lv], clock and Mup)

This circular dial (on the top, left-hand side, under the QUAL, WB and ISO buttons) doesn't turn unless you press the release button just above it. It sets the frame advance rate, Live View, the self timer, and the mirror lock up.

S: Single Frame

One frame for each press of the shutter button.

CL: Continuous Low

I use this setting. Press the shutter once and you get one photo. Hold it down and the D300 takes pictures continuously at any speed you choose in Custom Function d4 (page 55). The default is 3 FPS, which I use. You can set this to any integer between 1 FPS and 7 FPS in Custom Function d4.

If I need one shot I get one shot. If the light is dim and I want a few shots to ensure I get a sharp one, I hold the release down and make several from which I'll pick the sharpest. Faster selections make it more likely that I'll get two shots when I want just one.

CH: Continuous High

The D300 runs at its top speed (6 or 8 FPS depending on grip and battery) as long as you hold down the shutter.

I don't use CH because it's so fast that I often get 2 or 3 shots when just one will do.

[Lv] (Live View)

Unlike Canon, it's easy to use Live View. Set this and press the shutter. Press the shutter again to get out of Live View. I'll explain the various Live View options under the *Shooting Menu* (page 30).

Self Timer (clock icon)

Press the shutter and the D300 takes a picture some seconds afterwards. We can set the delay in *Custom Function c3* (page 52).

Mup (Mirror Up)

Press the shutter and the mirror flips up. Nothing happens until you press the shutter again, at which time the picture is taken and the mirror flips back down.

Note 1: The Self Timer and Mirror Up modes are defective in design. If you forget to set either back to the other modes (I always forget) you'll still be in these weird modes tomorrow! Worse, the Mirror up mode is still stupid, since just like the D700 you need to buy a \$100 cable release to release the shutter after the mirror goes up.

The correct design for these two functions, as done on the Mamiya 7, is to add a dedicated self timer button. Press this button and the shutter fires several seconds later. On an SLR the correct implementation is to have the mirror flip up at the beginning of the self timer interval. You'd get sharper pictures, not have to screw with screwing and unscrewing expensive electronic cable releases, not have to remember a cable release, and not miss tomorrow's shots because you forgot and left the D300 selector in last night's position.

Note 2: If you have no cable release, you can use the Mup mode and wait 30 seconds. 30 seconds after you press the shutter, the mirror flips up and the D300 fires the shutter anyway.

Note 3: At default, the D300 needs perfect locked focus to take a picture in S mode, and locked focus to start the Mirror Up or self timer modes. If you don't have perfect focus, the D300 ignores you in these modes. Sometimes bad lenses may not be sharp enough to get good enough focus to let the D300 take a picture in these modes, especially with other than the center AF sensor. You can set the D300 to shoot even if it's not in perfect focus at *Custom Setting a2* (page 47).

By default, the D300 takes pictures whether or not it's in focus in the AF-C modes.



WB, QUAL, and ISO

Hold any of these and spin the control knobs on the right to adjust.

White Balance (WB)

This is critical to getting the photos you want right out of your D300.

Spin the rear knob for broad changes. Spin the front knob to fine tune. See my White Balance Examples page (<http://kenrockwell.com/tech/white-balance-examples.htm>) and also my White Balance page (<http://kenrockwell.com/tech/whitebalance.htm>) for the specifics of each setting.

Here is a run down of the individual settings from left to right, as shown along the bottom of the top LCD and as set with the rear dial:

Auto (A)

I use this all the time. It makes its best guess for WB. It's usually very good. Indoor tungsten can be too orange unless you have some bright tungsten light also in the image. If you do, it removes the orange and compensates completely. If not, the D300 only partly compensates and you have a nice warm image instead.

Tungsten (hanging light bulb icon that's easy to confuse with the sun)

This makes the picture very blue. Use this only for deliberate freezing Arctic effects, or under conventional tungsten light bulbs.

Fluorescent (glowing tube icon)

Used to make crappy fluorescent light look less crappy. These settings rarely work; use the preset setting below for better results.

Direct Sunlight (smiling sun icon)

Use this outdoors with sun shining directly on the subject.

Flash (lightning bolt icon)

I never use this. It's almost the same as direct sun. I'm told it's really for studio strobes, since the Auto mode compensates magically for flash if you use it on-camera. The reason to use this is if you use a different trim value for your strobes than you do for sunlight. I'll get to trims in a bit.

Cloudy (cloud icon)

Warmer (more orange) than the sunlight position. I use this in shade, too.

Shade (house casting a shadow icon)

Very warm. Adds orange to your photo. Use this for sunset shots, or shots in open shade lit by the sky.

Continuously Variable (K)

This setting lets you choose any amount of blue or orange. Once you select "K" you choose the value, from 2,500 to 10,000, with the front knob while holding WB. The calibrations are abstract in what we scientists call "Degrees Kelvin". More degrees look warmer. There are no rules in real-world photography: use whatever setting looks best to you.

2,500 K is very, very blue. I'll use something around 2,650 K in dim home lighting to get neutral results. 3,200 K is the same as the tungsten setting above. 5,400 K is the same as direct sun above. I'll use something around 4,000 K indoors with a mixture of sun and tungsten light. 10,000 K is very, very orange. The shade setting is similar to 7,500 K, and 10,000 K is the warmest (most orange).

Preset (PRE)

You use this setting with a white or gray card to get perfect color matching. The D300 can recall five settings: just hold "WB" and spin the front knob after choosing PRE with the rear knob. You can use menus to save the five settings.

I never use an actual card. I always grab a napkin, t-shirt, back of a menu or other piece of white. Black text makes no difference, so long as the background is white. If you choose a bluish piece of paper (like a glossy printed piece), your results will be warmer (more orange), and if you use a more orange piece of paper (like a cheap paper napkin), your results will be more blue.

To set your white balance to something white:

1. Ensure your card or other neutral object is in the same sort of light as your subject. Changing the angle of the object often will favor one kind of a light or another in mixed light, which will greatly affect your result.
2. Hold WB and spin the rear dial to get to PRE.
3. Release WB.
4. Press and hold WB again for a few seconds.
5. PRE starts to blink.
6. Release the WB button.

7. Point your D300 at the card and press the shutter.
8. If the display flashes "good" you're set.
9. If the display flashes "ng" then repeat from step 4.)

The D300 stores this as value d-0. You can save five different values using the menus, numbered d-0 through d-4. d-0 is always the value you just saved. You can recall the other saved values by holding WB and spinning the front knob. Thank God you can recall them without menus. The menus (explained later) are only for storing, sorting and managing these. I have mine set to 1.) indoors under crummy residential light, 2.) the screen of my laptop computer, 3.) mercury street lights and 4.) a cloudy day. I'm sure you will be more inventive.

White Balance Trims (fine tuning)

These are critical to getting the photos you want right out of your D300.

I rarely get what I want as set above, and usually need to set my image slightly warmer (more orange or amber (A)).

This is easy, but often overlooked by beginners. All you need to do is look at the image you just made on the LCD. Like it? You're done. Too cool (blue)? Then hold WB and move the front dial a couple of clicks to about A3 and try again. The more A you add, like A5 or A6, makes the image more orange, and the more blue you add, like B4 or B6, makes it bluer.

Easy! Do this and all your photos will be bang-on and you can stop wasting your time waiting for raw images to process.

QUALity • (also has a green dot)

QUALity sets the file format and compression levels.

Hold it and turn the rear dial to choose the kind of file (JPG, TIFF or RAW), and the level of JPG compression. Keep spinning the dial, and you can record RAW at the same time as JPG.

Hold and turn the front dial to change JPG and TIF image size in pixels.

I use Large or Medium and JPG BASIC.

The D300 has enough resolution for great 20x30" (50x75cm) prints. Even the Medium setting has plenty of resolution for great 12 x 18" (30x50cm) prints, so I usually shoot in Medium unless I plan to be making huge enlargements.

As I explain on page one, I chose JPG Optimal Quality, and then Basic. This gives me great quality at the smallest possible file size.

Why do I worry about file size? Simple: I shoot a lot, and bloated files waste time and money in transfer, backup and storage. Try it: shoot the same thing at several settings, and you won't be able to see the difference.

Green Dot •

The green dot, when held along with the green dot on the ISO button, resets most things back to normal. Some things don't get reset – see page 3 for more.

ISO

ISO is pronounced Eye-Ess-Oh, not “eyeso.”

Hold this and spin the rear dial to change ISO. Default is 1/3 stop steps. I prefer to change ISO in more meaningful full stops as you can set in a menu at Custom Setting b1 (page 50).

Firmware flaw: ISO goes from 100 to 6,400. Above ISO 3,200 Nikon uses bizarre terminology to scare amateurs away from setting these ISOs because these same amateurs would clog up Nikon's (800) NIKON-UX support lines complaining about grain. Nikon calls ISO 6,400 “H+1.0.” Likewise, ISO 100 is called “L-1.0.”

Hint: Since ISO is displayed in the finder, you can set this without taking your eye from the finder.

Hint: If you've selected Auto ISO (page 39), then you cannot set a manual ISO higher than you allow in Auto ISO. To get weird ISOs like ISO 6,400 (H+1.0), you must turn off Auto ISO.



Top right controls

Exposure Mode Button (MODE, right side)

Hold it and spin the rear dial to select among P, S, A and M exposure modes.

P: Program

I use “P” for program auto exposure. In this mode the camera chooses the f/stop and shutter speed for you. If I want different apertures or shutter speeds I rotate the rear command dial, which selects alternate combinations of f/stops and shutter speeds which give the same exposure. Nikon calls this “Program Shift.” An asterisk (*) shows up next to the P on the top LCD to let you know you’ve chosen a different combination for exposure. The asterisk doesn’t appear in the finder, but you can see the apertures and shutter speeds. The asterisk goes away when you return to the standard combinations. The standard combinations are f/1.4 @ 1/8, f/2 @ 1/15, f/2.8 @ 1/30, f/4 @ 1/60, f/5.6 @ 1/125, f/8 @ 1/250, f/11 @ 1/500, etc.

An easy way to return to these standard combinations is to flip to a different mode and back to P, or turn the D300 off and back on.

A, S and M Modes

If you want to use a fixed aperture (A) or shutter speed (S), then use A or S mode and the camera will automatically pick the other value.

If you want to set both the hard way, use M, manual, mode.

In these three modes you select the aperture with the front dial and the shutter speed with the rear dial. You can reverse which dial does what in the Custom Setting: Controls Menu (page 66). Of course in A or S mode you can’t set one of the two values because the camera is setting one for you.

A Mode: Aperture Priority

In A mode you choose the Aperture and the D300 chooses the shutter speed.

S Mode: Shutter Priority

In S mode you set the Shutter and the D300 sets the aperture.

If the D300 runs out of good apertures you easily can get under- or over-exposure in S mode: watch that the D300 can select a correct aperture for your lighting.

M Mode: Manual

You set everything the hard way. Look at the LCD to check exposure. You can use the bar graph in the finder, but why? If you wanted to do that, use another mode and let the D300 do the setting for you.

Hint and Firmware Defect: AUTO ISO (page 39) doesn't deactivate in Manual mode. I always turn off AUTO ISO when I enter Manual Mode.

Hint: You can see P, S, A and M displayed in the finder, so you can adjust them without taking your eye from the finder.

FORMAT (combined with MODE button)

Hold this along with its brother on the back left rear of the camera (combined with the trash button). You'll get a blinking "For" on the top LCD.

Hold both of these again and you'll completely reformat the memory card.

Professionals reformat a card each and every time they put it in the camera. This is because files and folders are sometimes messed up or changed when read with a card reader, read in-camera by a computer or used in any other camera. Professionals prefer to be safe than sorry. They don't use cards to archive previous photos.

One time I kept saving my winner shots on a card by simply erasing the rest each time. After a few months I started to get errors. These went away as soon as I reformatted the card. Reformatting completely renovates the card. Erasing does not, and may leave the potential for errors.

Power Switch (right side)

Tap it past ON to turn on the LCD illuminators and the meter.

There's no need to turn OFF the D300 except to prevent accidental operation when squashed in a camera bag. The D300 turns off by itself after a few seconds of ignoring it. The only thing the OFF position does is act as a lock against unintended operation.

Exposure Compensation Button • (+/- and a green dot)

This is the most important control on the D300 or any other camera.

Hold the button and spin the rear dial. + makes the next picture you take brighter, and – makes it darker. If your photo is too dark or light, just change the setting and try again. Easy!

Remember to set it back to zero when you're done. If you don't, you'll see a big bar graph on the right of the finder and on the top LCD.

See more at *How to Set Exposure* at my web site (<http://kenrockwell.com/tech/exposure.htm>). Ignore Nikon when they suggest you don't use this with Matrix Metering; I do it all the time.

Hint: You can see the + or minus value displayed in the finder as well as the top LCD, so you can adjust this without taking your eye from the finder. The two displays only read the value when the button is held, otherwise those digits read exposures remaining.

Hint: This changes the setting for the next photos you take. It doesn't change any photos you've already made.

Rear Controls



Play [>] Button

Press it to see your pictures. Press again to turn them off.

There are a lot of trick play modes, like zooming all the way in with the center control button and being able to scroll around with the dials.

My favorites are explained under the settings for the rear thumbswitch (page 60) and the Command Dials (page 66) .

Trash (also doubles as one of the two FORMAT buttons)

With an image on the LCD, press once. You'll get an "Are you sure?" message. Press again and the shot's gone. The D300 ignores this button if it's not playing back.

Hold this along with its brother (the MODE button) to format a memory card (page 19).

MENU

This gets you inside your D300.

I'll cover what you can screw up with this in the pages that follow.

? / Key icon / INFO

While in Menus: “?” Press for more information about whatever you're setting, if you see a gray “?” on the lower left of the color LCD. If no gray “?”, then there is no help available.

While in Playback: “Key.” It protects (locks) the image from erasure.

Warning 1.): It marks the file so well that it won't empty out of my trash on my computer unless I go in and remark the file on my computer first!

Warning 2.): These images are erased from your memory card when you format anyway. Now you see why I don't use the lock feature.

While Shooting: “INFO.” It calls up a display of just about everything you might want to know on the huge rear color LCD. I find this far more useful than the vestigial top or rear LCDs.

Checkerboard (–)

Playback only: Tap it to select one, four or nine shots up at once. If zoomed, tap it to reduce the zoom.

Trick: When you have 4 or 9 images up, spin the front knob to flip more quickly between rows of images, presuming you've turned this on in custom setting f7 (page 66).

Magnifier (+)

Playback only: Tap it to zoom in. If you have 4 or 9 shots up at once, tap it to get to 4 or just one.

Trick: When you have 4 or 9 images up, spin the front knob to flip more quickly between rows of images, presuming you've turned this on in custom setting f7.

OK

While playing back at normal size: Tap it to get to the Retouch menu (page 74).

While playing back with zoom or with 4 or 9 images: Tap it to return to one image on-screen at normal size.

While in menus: Takes action on what you've set.



Eyepiece Focuser

This is the little +/- knob, under the rubber just above and to the right of the eyepiece.

Twiddle with it to clarify the finder, especially if you wear glasses.

AE-L AF-L (Top center)

Hold this to lock exposure settings while shooting. You may change what this button does in the Custom Setting Menu f6 (page 66).

Metering Mode Selector (dial around AE-L AF-L button)

It has three positions: Center Weighted, the circle on the top, Matrix, the rectangle in the middle, and Spot, the dot on the bottom. For more information on matrix metering, see my web page at <http://kenrockwell.com/nikon/matrix.htm>.

I always use Matrix, the center rectangle. Matrix is a magic system which really figures out what you're shooting, even if it's very dark or very bright and white, and just gives the correct exposure. It sees in color, sees depth, it sees in over 1,000 places in the finder, and has an astounding amount of perception in getting exactly the exposure I want. Even with Nikon's first Matrix meter in the FA of 1983, I could point the camera at anything, even into the sun, and always get perfect exposures.

I shot this picture of sunrise at Mono Lake with a Nikon FA, 600mm f/5.6 ED Nikkor AI-s, Matrix Meter, Program Auto exposure and Fuji Velvia. I just pointed and shot; the Matrix meter does the exposure calculations so I can pay attention to the composition.



The meter in the D300 is many times better.

I never use center weighted, and I certainly never use spot. With the Matrix meter, just shoot. It's smart enough to do all the compensation and locking that you used to have to do in the older modes.

The other positions are left-overs from earlier decades. They are blind to color, blind to absolute luminance, blind to distance, and blind to relative position in the frame. Matrix sees in many dimensions at once, while these blind old meters see in only one dimension. The Center-Weighted (CW) meter was Nikon's most popular meter in the 1960s and 1970s, and the Spot meter is left over from the 1980s.

The CW meter was useful in its day because it measured just the right area of the finder so you could point the camera at the main subject, set a manual exposure, recompose, and shoot. Unless the subject just happened to be the right tone, you'd always have to use exposure compensation for light and dark subjects. In the 1970s, AE cameras had AE locks, so you'd point, meter, lock, recompose, and shoot. What a pain!

The Spot meter sees only a small spot in the finder. It requires knowing the Zone System to use well, since few scenes actually have any tones at exactly Zone V from which to spot meter.

I wish there was a way to lock this in Matrix, as there is on the pro cameras. It's easy to knock this and not realize that it's been changed.

For more information on the Zone System, see <http://kenrockwell.com/tech/zone.htm>. For information on spot metering, see <http://kenrockwell.com/nikon/spot.htm>.

AF-ON (Top center right)

Focuses the lens, but doesn't take a picture.

This button is helpful if you disable the AF from activating when you press the D300's shutter in Custom Setting a5 (page 48). If you do, then you can focus with this button, and have an AF lock when you release it. I'd rather it was a self-timer, but Nikon didn't ask me about this one.

**Big Thumb Button**

This is used for everything: menu navigation, selecting AF areas, scrolling through playback images and a whole lot more.

You can configure this button in Custom Settings f1, f2 and f3 (page 60 onwards).

I set mine to zoom way into an image when pressed in the center.

Trick: If you set a center push to zoom on playback (page 60), you can spin the rear dial to move to different images at the same position and zoom! This makes it easy to pick out the sharpest image. Unfortunately as soon as you hit the delete key it goes back to unmagnified, sort of making this less useful for in-camera selection and deletion.

L - • (dial around Big Thumb Button)

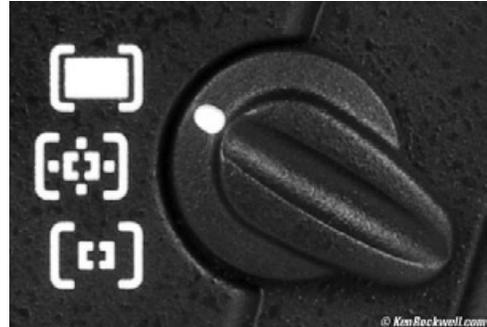
This is an electronic lock.

It's smart: it only locks the AF selection. It doesn't lock you from anything else.

Because of this, if you can't select AF areas, check it because it can get knocked. Even in L you can still do everything except select AF areas.

AF Area Mode Selector (below Big Thumb Button)

This lets you choose how the D300's brilliant AF system uses all its sensors. This switch is important for switching from shooting static subjects to action. I explain this in *How to Use the D300 Autofocus System* (page 85).



Pac-Man Lever (below AF Area Mode Selector)

The Pac-man lever pops open the CF card door.

Playback Menu

How to get here

Press MENU, click to the left and then up to select the top “[>] ” (play) icon. You'll then see PLAYBACK MENU on the top of the color LCD.

What it does

It sets various playback options, including what data you see on playback.

What I change

I activate the color histograms, the data, and set the image to show after every shot.

Delete

This is helpful if you want to delete all images while saving those for which you pressed the “? / Key” button to lock. I don't use this. I do all my editing and selection in my computer and I do my in-camera deletions one-by-one with the “trash can” key.

Playback Folder

The camera can record and play to and from different folders.

ND300 plays all the shots made on the D300, but ignores shots made on other cameras. You shouldn't be using cards with data from other cameras since that might lead to errors. Always format a card anytime it's put into a camera.

All shows you everything on the card. I leave my D300 set to ALL.

Current ignores photos in folders other than the one to which you're recording. If you create new folders (page 32) for different scenes as you shoot, you won't see the other shots on the card!

Hide Image

This is used to hide embarrassing photos of your friends from playing back before you get to download them. The images are on the D300, however when marked this way they will be skipped on playback just as if you deleted them.

Move the cursor left and right to select images, press the center to mark as Hide or

Unhide, and press ENTER to save. Now the camera won't play these images, even though it still tallies them in its counter on the top right that reads "34/284." You can detect a hidden image because this counter will skip.

Display Mode

This lets you select which data screens come up in rotation when you look at each image. By default, these are all OFF. You can choose or refuse:

Basic Photo Info

Highlights: Relatively useless, this only reads one channel at a time. Unfortunately the "RGB" selection is defective because it's reading only the luma channel, a single channel which is a mixture of some red, a lot of green and almost no blue. It's not reading what it should, which is any peak in any of these three channels independently. That would take more computing power than Nikon chose to devote to it, or possibly Nikon's engineers haven't figured this out yet (I used to earn my living 15 years ago teaching digital imaging gear makers these finer points). You can blow out your reds, blues or anything other than gray or green and never notice. You can select which channel to read while in the RGB histogram page. If you work at Nikon I'd love to help you get this right: just ask me.

Focus Point: This shows which focus areas were active. It shows the area you set, or the area(s) chosen by the D300 in its clever dynamic modes. It shows them as little red rectangles on the LCD as you play back. It only shows them for some modes, not all of them.

Detailed Photo Info

RGB histogram: Yes, use this! See my Color Histogram page at <http://www.kenrockwell.com/tech/yrgb.htm>.

Data: this is three pages of f/stop, white balance, etc. I also use this.

Image Review

This sets the LCD to show each image after you shot it.

Nikon hid this well! It defaults to OFF to save the battery and annoy people. I leave mine ON: the whole point of having a digital camera.

After Delete

This is an odd one. You may choose to see the next or the previous image after you delete one. The third choice, "continue" keeps going in the same direction as you were going. I leave this alone, at its Next default.

Rotate Tall

Who translates these? I leave this off.

If you set it ON, your vertical shots, if shot with Auto Rotate ON, will playback as tiny little vertical images. Luckily the D300 is smart enough to magnify using the whole screen if you choose this mode.

The D300 is not smart enough to use the rotation sensor during playback. Canon's point-and-shoots are. Many Canon point-and-shoots expand these images to full screen if you rotate the camera during playback! The D300 doesn't.

I don't use Rotate Tall.

Slide Show

This must be hot in Japan. It lets you amaze your friends with an exciting slide show on the tiny screen. I don't bother with this.

The best use of this is with an HDTV and the HDMI outputs. You could plug the D300 into a TV, HDTV or video projector with the conventional video output, but the conventional video resolution output is so bad everything will look awful.

Print Set (DPOF)

I never use this. It lets you mark images for printing if you sorted and then printed directly from your D300, and had a lab which could read this data.

I guess it's popular in Japan.

Shooting Menu

How to get here

Press MENU, click left and then up and down to select the camera (Shooting) menu. You'll then see "SHOOTING MENU" on the top of the screen.

What it sets

It sets parameters related to what film used to do. The Shooting Menu sets ISO, grain, contrast, color and a zillion other critical things that set the look of your images.

The shooting menu would make more sense if it were called the Film menu, since many other menus also affect shooting.

What I change

I change a lot here. This is where I make the D300 give me the wild colors I love.

Clarification and complaints

Nikon let the people who wrote the instruction manual design the menus.

A more sensible icon would have been a piece of film since the Custom Setting Menu ("Pencil" menu, page 44) has more to do with shooting and camera mechanical settings than the Shooting Menu does.

Don't worry about what's in what menu. It doesn't make complete sense and you'll forget where things are, but that's why there's the My Menu menu (page 77). It's not you, it's the camera.

Shooting Menu Bank (A, B, C and D)

Menu banks seem like memories, but they aren't. You can't save or recall them. All they do is return you the settings you had when you last changed to another one.

For instance, if you change things in A, and go to B, you'll be in whatever settings you last had when you were in B. If you change some things and go back to A, you'll be back where you were when you left A. If you go back to B, you'll be where you were when you last left B.

There is no way to lock or save these. The best way to deal with them is consciously make an effort to shift into each as you enter an assignment to which they apply, and deliberately change out of them when you're done that assignment.

For instance, I use my A bank for normal shooting, and my B bank in my studio. When I walk into the studio, I deliberately shift to B, When I walk out, I always try to remember to shift back to A. If I forget, I'll start changing settings in the wrong bank!

These would make more sense if they were called "Film Settings" instead of Shooting Settings. Don't complain to me, but these Shooting Menu Banks don't store everything I'd like them to. They aren't Shooting Settings; they are film settings. Drive and focus modes aren't remembered with them.

You have four memory positions: A, B C, and D. Nikon was stupid enough to use the same names, A, B, C and D, instead of 1, 2, 3, and 4, for the Custom Setting Menu Banks (page 44)! These confuse me, and I have an engineering degree for these things.

You can add a name to each one. I set my A bank for normal operation with the settings I described on the very first page of this manual, and don't name it.

I set my second bank, B, to what I use in my studio. I name it STUDIO.

I set my third, C, for comparing lenses. I call it COMPARISON. I also use this if shooting for time lapse or stitching. I deactivate the default automatic contrast, automatic white balance, automatic dynamic range and auto everything so that these wouldn't change between shots. Don't use this for normal photography - you want the D300 to adjust these for you.

Want to know what bank you used to make a shot? Each bank recalls your file naming convention (page 33), so you can use different file names for each bank.

How to Recall a Setting

Easy: MENU > SHOOTING MENU > Shooting Menu Bank > (select one) > OK.

You'll see SHOOT and A, B, C or D on the top LCD, and on the read LCD if you tap INFO.

How to Save a Setting

You can't save or lock any of these settings. This is a design defect and confused me at first.

The D300 continuously alters whichever Shooting Menu Bank is selected. Choose a different Menu Bank and you're changing that Menu Bank as you're shooting.

Menu Banks are confusing because all they do is return you to where you were when you last left them.

If you haven't selected a bank, the D300 defaults to Shooting Menu Bank A. You see that on the top LCD as "SHOOT A."

As you tweak settings, these are updated for the currently selected Shooting Menu Bank.

If you choose Shooting Menu Bank B, the settings for A are saved until you select Bank A again. Bank B is then modified as you work the camera.

When you switch to a different Menu Bank, the D300 recalls whatever settings you had when you left that Menu Bank for a different one.

This is retarded, but it's the way the D300 works. I only figured this out by having to explain it. This is why my settings were always changing all by themselves. If you are using a bank and change your WB, you just changed that bank. Sorry. If you change a setting and then realized you were in the wrong bank, sorry again. You just screwed up the wrong bank. There is no "back" button.

If you want to reset a bank to its defaults, select it, then use the next menu item to reset it.

I suggest Nikon fix this by treating these Menu Banks as they treat preset White Balances. They should have one Bank which changes as you shoot, as they all do today. The other banks should be memory locations which only change if you save to them deliberately.

How to Name a Setting

You can save a name for the setting, even if you can't save the setting itself.

Choose MENU > SHOOTING MENU > Shooting Menu Bank > Rename. Select the bank you want to rename. Enter the name, and remember to press OK when done. If you forget to press OK, it forgets the name and you have to start over!

Hint: there's no obvious way to delete a character if you make a mistake. Use the Trash button to delete characters.

Reset Shooting Menu

This resets everything in the selected Shooting Menu Bank (just explained above) to the defaults. You reset only the bank in which you're working.

As soon as you select "Menu Reset" and "Yes" it resets. It doesn't ask "Are you sure?" first. Be careful!

Play with everything to your heart's content, since if you do screw anything up this reset will fix it. Choose a bank you don't use and you won't change the bank you do use.

Active Folder

You can create, name and rename folders on your CF card. They are named with a 3-digit number from 100 through 999.

New Folder Number

This is self explanatory. Choose a number, which creates a new folder, and go.

Select Folder

This selects the folder into which new photos are put. You use this to record images into a previous folder.

You might want to use Select Folder if you shot one event or subject, went on to a second and made a new folder for it, and then returned to the previous subject.

File Naming

Fun! You can choose the first three letters or numbers which will be used to name all of your files! I use KEN, or 300 for my D300. If I had four letters I'd use ROCK.

You can select different letters for each Shooting Menu Bank (page 30), making it easy to swap among four sets of letters. Maybe you share a camera and want to know which shots you made.

The D300 always begins Adobe RGB file names with an underscore. You choose the three letters and the D300 chooses where they go.

Tip: You can't delete as you enter characters. Since you only have three, change a bad one by moving the cursor over it and entering the correct character.

Image Quality

Image Quality duplicates half of the QUAL button. It chooses JPG, raw or both and the JPG compression level.

Whether you use the QUAL button or this menu you're also changing your Shooting Menu Bank (page 30). See my discussion of the QUAL button (page 16) for details.

Image Size

Image Size duplicates the other half of the QUAL button. It chooses the JPG image size in pixels. It does not directly choose the size of the file in bytes. See my discussion of the QUAL button (page 16) for details.

JPEG Compression

This is an important but obscure menu choice. It chooses the algorithm used to generate the JPGs. It works in addition to the BASIC, NORMAL and FINE choices, giving you a total six different JPG settings for every image size.

Size Priority is the default. It was the only option in older cameras like the D1X, D50 and D70s. Since it was the only option in those cameras, they had no menu option for it.

JPGs need more data (file size) to maintain quality as the subject's contrast and complexity climbs. A blank sky is easy for a JPG, and a busy tree with a zillion branches requires a much bigger file to retain quality as a JPG.

Size Priority keeps the file size constant regardless of image detail or subject complexity. This is bad because quality will get worse (add artifacts) as detail goes up.

Optimal Quality lets the file size grow if needed to maintain quality, and otherwise keeps it smaller. I use only this option.

The Optimal Quality option lets the camera allocate bits intelligently based on the subject, instead of making big files when they aren't needed for flat subjects like blank skies.

Using the Optimal Quality option in BASIC JPG lets the file size grow to the same size as JPG NORMAL if the subject needs it, and lets the file size shrink back to JPG BASIC when it's not.

Firmware Defect: Nikon accidentally reversed the two icons! The icon which shows an arrow from above directing all the little identical images to fit next to each other in the same space, which means "same size," is used for Optimal Quality. The icon showing little images of different sizes working together is used for Size Priority. Ignore these icons because they are reversed.

NEF (RAW) recording

This lets you chose many raw options.

Lossless Compressed

I don't use this, which is the default.

Compressed

I use "Compressed." You get full raw quality, range and options, however the file sizes are kept much smaller with no visible loss.

Uncompressed

Forget this. You get the same data and image quality as the other options, but with many times the file size. This option exists only for conspiracists who thought Nikon was cheating them when this option wasn't on other cameras. Ask your math professor; you get exactly the same data in Lossless Compressed and exactly the same images and adjustments in Compressed, but with none of the bloat.

NEF (RAW) Bit Depth

I use 12 bit. I can't see any difference with 14-bit, but 14-bit wastes my valuable time and file space which I can see.

Bit depth refers only to the precision, not range or accuracy, with which brightness levels are defined. The number of bits is completely unrelated to the brightness range described by these digital values.

JPG is log, not linear, so its 8 bits perfectly render the entire bright-to-dark visual range.

NEF is a linear, not log, format. Because the levels (quantization steps) between digital values are the same at bright and dark, we have to use a lot of bits to get enough precision at the dark end. The log nature of JPG means that the q-steps become far finer at the dark end, so 8 bits is plenty.

Since NEF can't tailor the q-steps with brightness, we need to use 12 bits so that we have enough precision in the darks. This leaves us wasting bits at the bright end, where 12 bits gives far more precision than needed.

With 14-bit systems, it helps in the dark end, but is a complete waste at the bright end of the range.

When you select 12-bit, you're still getting 14-bit performance in the dark where you need it. All that changes is that the 12-bit position merely uses a look-up-table to skip between values at the bright end, where we far more precision than needed anyway.

Few photographers have Ph.Ds in mathematics, so they understand none of this, and waste valuable time and disc space by shooting in the more bloated modes like 14-bit, lossless or uncompressed, or shooting raw in the first place.

Photo books are written by laypeople who have forgotten anything past 9th grade math, so they misinterpret this to imply that 14-bit covers a wider range. Nope, it's just more precision where we don't need it.

White Balance

This duplicates the WB button (page 14), and adds even more features.

I use AUTO. See my explanations of the WB settings (page 14), my Examples of D300 WB Settings (at <http://kenrockwell.com/tech/white-balance-examples.htm>) and my page how to set White Balance (at <http://kenrockwell.com/tech/whitebalance.htm>).

A huge advantage of Nikon over Canon is that we can set just about everything about WB right on the camera without needing to navigate menus. We still need these menus for some more tricks that few people will need.

Multiple Fluorescent options

Unlike tungsten lights, fluorescent lights have awful color balance, and each bulb type and brand is completely different than the next.

Once you've selected Florescent, Nikon provides seven different settings for different types of bulbs! To select among these, just click right once you've selected Fluorescent

Hint: These types of bulbs always look awful. I never use these options since they never match the bulb anyway. If I have to shoot under them, I use the PRESET option as described at the WB button (page 14).

Green/Magenta bias

I never use this.

To add or remove a little green or magenta to your photos, simply click right once you've selected any of the WB settings in this menu. You'll get a chart on which you can adjust both green/magenta and amber/blue bias.

The D300 is awesome in that you can set different biases for each WB setting. Last I tried, a severe limitation of Canon DSLRs is that this adjustment affects every setting. IN other words, the D300 has nine different WB settings, each of which will remember its own G/M and A/B tweak, while with Canon, the one G/M and A/B setting affects them all. Worse, you have to use a menu to set any of this, while on Nikon, the far more important A/B setting is at your fingertips without menus.

Managing the Preset White Card Settings

Well hidden, you also can set the green/magenta and amber/blue bias for white-card preset WB. Since the front dial selects among the five memorized settings, you have to use the menus even to set A/B bias.

To do this in the menus, MENU > SHOOTING > White balance > PRESET and click right. Select one of them, then hit OK, or hit SELECT (center of Big Thumb Button, page 25) and SET.

This is also the menu in which you can save, move and name your various preset white card WBs. This is another big advantage with Nikon: I save these and call them up using only the dials for various difficult conditions, like indoor home lighting. To save and rename, select one and hit the center thumb button.

Each time you hold down the WB button in PRE, get it to blink and press the shutter, you store that value in d-0. To save it, MENU > SHOOTING > White Balance > Preset > (click right) > Select a location (d-1 through d-4) into which you want to store it, press the center of the Big Thumb Button, select Copy d-0, OK. You just saved that setting into d-1, d-2, d-3 or d-4, and can call it up with the front dial when you've selected PRE with the rear dial.

You do the same thing to edit the comment (name). If you've shot a blank card, you really do need to add comments, since there's no way the little thumbnail will mean anything.

Set Picture Control

This is where you set the important things, like contrast and saturation.

Picture Controls are so critical to getting the pictures you that I have a complete section on Picture Controls (Appendix A, page 79).

These work the same, and give the same look, among the D300, D700 and D3.

Manage Picture Control

This is where you save and recall Picture Control settings. I have an entire page about this at Picture Controls (Appendix A, page 79).

Color Space

Don't touch this unless you really know what you're doing and print your own work.

sRGB is default. It's the world standard for digital images, printing and the Internet. Use it and you'll get great, accurate colors everywhere, all the time. Like what you see in my Gallery? That's all coming to you in sRGB. Use it and you'll automatically get great, saturated and accurate color everywhere. For examples, see my page titled "Color Management is for Wimps" at <http://kenrockwell.com/tech/color-management/is-for-wimps.htm>.

sRGB is specified in IEC 61966-2.1, which you may also see when examining color profiles. That gobbledygook means the same thing as sRGB.

Adobe RGB should never be used unless you really know what you're doing and do all your printing yourself. If you use Adobe RGB you'll have to remember to convert back to sRGB for sending your prints out or sharing them on the Internet. Otherwise they look duller than sRGB!

Adobe RGB squeezes colors into a smaller range (makes them duller) before recording them to your file. Special smart software is then needed to expand the colors back to where they should be when opening the file.

If you have the right software to re-expand the colors you theoretically might have a slightly broader range of colors. However, if at any point in the chain you don't have the right software and haven't attached the Adobe RGB profile you'll get the duller colors as recorded!

Web browsers don't have, and print labs rarely have, the right software to read Adobe RGB. This is why people who shoot it are so often disappointed. Even if a place has the right software, if you forget to add the Adobe RGB profiles to your files these places still won't read them correctly and you'll get dull colors.

Adobe RGB may be able to represent a slightly larger range of colors, but no screen or print material I've used can show this broader range, so why cause yourself all the trouble? I've experimented with 100% saturated grads in these two color spaces and never seen any broader range from Adobe RGB either on my screen or on SuperGloss Light jet prints.

Worse, if you're the sort of vacuum-operating geek who wants to shoot Adobe RGB because you read about it in a magazine article, did you realize that because the colors are compressed into a smaller range that there is more chroma quantization noise when the file is opened again? Ha!

See more at about Adobe RGB at my page <http://kenrockwell.com/tech/adobe-rgb.htm>.

Active D-Lighting

This is Nikon's mis-naming of the Automatic Dynamic Range Control. It is a very important part of why the D300's images can look so great.

I always leave it set to NORM, which magically optimizes highlights and shadows to look great.

This is so important that I have a complete ADR page all about it at <http://kenrockwell.com/nikon/d300/dynamic-range.htm>.

Long Exp. NR

This is Long Exposure Dark-Frame Subtraction Noise Reduction

OFF

Default. Leave it here.

ON

Don't use this. If you do, the D300 will double the amount of time you have to wait around for longer time exposures. The D300 is so good you don't need this. Nikon only includes this because old-timers would get peeved if it was missing.

High ISO NR (High ISO Noise Reduction)

This lets you control the strength of the noise reduction (smudging) applied at high ISOs.

I find the NORMal (default) position optimum. You can set it higher, but it removes fine details and texture. You can set it lower and get more noise.

ISO sensitivity settings

ISO sensitivity

This duplicates the ISO button (Top Controls, page 17). I use ISO 200.

ISO sensitivity auto control

This is where we set the AUTO ISO feature ON or OFF. Auto ISO magically bumps up the ISO as the light gets weaker, saving you a lot of time since you no longer need to watch your lighting or shutter speeds. Set this and just shoot, from daylight to moonlight.

Auto ISO leaves the ISO alone until the shutter speed would get slower than the Minimum shutter speed set below. If the light (or your camera settings) would cause a slower speed, Auto ISO increases the ISO so the shutter speed remains at the slowest setting below.

Auto ISO keeps increasing the ISO as the light dims until it hits the Maximum sensitivity you've set, after which the shutter speed will be allowed to get longer than what you've set.

Maximum sensitivity

This is the highest ISO that AUTO ISO will use before lowering the shutter speed. ISO 6,400 looks great, so I set ISO 6,400 here.

Minimum Shutter Speed

This should be set to the slowest speed at which you won't get any subject or camera motion. I hope Nikon some day offers automatic tracking of this based on a selectable fraction of lens focal length, but for now, this is one of the settings I change as I change lenses or subjects.

I set 1/80 or 1/100 for people photos. For a 300mm telephoto lens, I might choose 1/250. For a wide angle lens for dim landscapes, I might choose 1/8.

Live view

Live view lets you set how Lv works.

Live View

Hand-held Mode

This lets you press the shutter once for Live View. As you're viewing, jam the shutter all the way down a second time and hold it. The D300 makes a bunch of noise, and gets off one shot. If you only daintily press the shutter when Lv is active, the D300 makes no photo and just pulls you out of Lv.

Tripod mode

This lets you fiddle with precise focus. I'll not try to explain how to use it; press the "?" button on the D300 as you set this and the D300 tells you how to use it.

Release Mode

This is where you select single or continuous shooting, since you had to use that control to select Live view. This is a design flaw; Live view and the self timer should not be on a rotary dial.

Multiple Exposure

This is silly. It lets you do what we did back on film.

This works and it's easy to use. Unlike film, it's smart enough to compensate the exposures so they add together without overexposure.

To use it:

1. Choose the number of shots to combine (2 - 10).
2. Hit OK.
3. Go up to DONE.
4. Hit OK. It only works if you remember to scroll up and hit OK.



Multiple exposure: the blinds in my office (5 exposures)

You'll see a tiny icon on the top right of the top LCD that looks like two rectangles mating.

Make your shots. You'll see each on the color LCD as you make it. You'll also see the mating rectangle icon on the color LCD.

You'll keep seeing the flashing mating rectangles icon on the top LCD until you complete all the exposures for which you asked in step 1.).

The D300 won't tell you how many you've made until you're done. You can cancel it in the same menu if you want. Choose RESET.

When you've made the last shot the D300 shows it as it did for the other shots for a moment, then goes off and adds them all together. After the CF light blinks a few times you'll see the composite image on the color LCD. The intermediate single images are not saved.

It works with JPGs and NEFs.

Don't turn off the automatic exposure compensation, called Auto Gain. If you do you'll get at least a stop of overexposure.

Interval timer shooting (intervalometer)

This works and it's fun. This lets you set the D300 to fire automatically at preset intervals.

The D300 is better than a video security camera because it has so much more resolution. You can point this outside, cover a wide angle and have more than enough resolution to read the plates off a perp's car. You'll even be able to read the titles off your DVDs that they're hauling away.

I tried it and busted a pair of cute bunnies who spent all night eating grass and hanging out in the middle of our street.

The basics are easier to figure out on your own than for me to explain here, so I'll only cover some specifics below.

Calculations

You tell the D300 the interval between shots and how many shots to take.

The D300 doesn't calculate how long the series will take. You can't tell the D300 to run for a certain period and make so many shots. You have to do the math yourself and tell the D300 how many shots and how much time between them.

Battery

It's easy to run down the D300 battery since you can program it to make so many shots. Long night exposures will kill the battery, too. You'll wake up and wonder why it stopped halfway through.

You may want to get an AC adapter if you really get into this, or be clever and optimize your ISO to keep exposures shorter.

Be sure to turn off the LCD review.

Select Intvl*Shots Menu (Intervalometer)

The D300 does more than a regular intervalometer. The D300 lets you shoot one shot at each interval, or a burst of them. The interval is set in another menu. The default interval is a minute and can be set from one second to many hours.

The Select Intvl*Shots menu is as clear as a lens cap. The Select Intvl*Shots menu is in the format of 001 x 1 = 0001.

The first 001 number sets the total number of intervals at which shots are made. If you set "060" and a one minute interval, the D300 shoots each minute for an hour (60 x 1 minute = 60 minutes).

The second single digit is how many rapid-fire shots are fired at each interval. Set it to one and you get the usual one shot at each interval. Set it to several and you'll make several rapid shots at each interval. You'd do this if you intend to cherry pick one shot from each burst, for instance, to recover if someone walks in front of your camera at one interval.

The last number is the total number of shots. This is calculated by the D300. You don't enter it. It's the number of bursts (the 001 part) multiplied by the number per burst.

Time Lapse

Want to see some intensely cool stuff? Check out Thomas Kranzle's time lapse reels at <http://www.thomaskranzle.com/>. He makes a shot about every 4 seconds, runs for about 640 shots, and assembles them in a film editing program at 24 fps for motion pictures. I saw his work when he showed our photo club.

To do cool stuff like this you need to:

1. Turn off every auto anything, including auto contrast and auto saturation. If you don't, your sequences will flicker from the auto WB or auto sharpening or auto anything from frame-to-frame.
2. Import all your shots to your Mac.
3. Open iMovie or Final Cut.
4. Create a new project. Thomas selects HD to get good enough resolution for film-out.
5. Select all the stills and drag them into the clips pane.
6. Find the command to sequence them together in the timeline as independent frames, one frame each. I forget where this command is and will vary with your software.
7. Hit go and voila! Time lapse!
8. Save it as you prefer. Thomas saves them as .MOV files and outputs to 35mm movie film, although more and more clients are asking for the files instead.

Of course you can do this down at video resolution, but using HD resolution (1,920 x 1080 24p) looks incredible and is easy from a digital still camera. This looks insane when projected digitally from a computer, since video by comparison is only 720 x 483i. My old iBook laptop can do this and output in HD easily with the software that came with it for free; good luck in Windows. I have an article on [Why Video Looks Crappy](http://kenrockwell.com/tech/video-out.htm) (at <http://kenrockwell.com/tech/video-out.htm>), and thus why you should do this in HD. HD has two-megapixel resolution while video has only 1/3 of a megapixel.

Exposure is set manually and left alone. For sunrises and sunsets it looks much better to have it fade to or from black than to twiddle the exposure frame-to-frame.

You can cheat and shoot bracketed bursts and import each set of shots as its own parallel timeline. You can crossfade between them as the sun comes up or down. Thomas found all this effort didn't have much benefit. (Beats me how to shoot bracketed bursts on the D300, I haven't tried. Thomas shot what you see with a Canon 20D. He wears out a lot of them!)

Custom Setting Menu (“pencil” icon)

How to get here

Press MENU, go to the left and select up and down to the pencil icon. You'll then see CUSTOM SETTING MENU on the color LCD.

What it does

The Custom Setting Menu screws with the camera's mechanics and meters and timers and focus and many other little things.

Nikon has subdivided these various menu functions into groups, and color coded them as Autofocus, Metering/exposure, Timers/AE Lock, Shooting/display, Bracketing/flash and Controls. The seemingly unrelated things separated by slashes (/) are Nikon's grouping.

I use Nikon's names as headers for each section, so please excuse me if they make little sense.

What I change

I change a zillion things, all explained on the next pages where I detail everything.

Complaints and organization

Nikon is pretty sloppy about naming and organizing the menus, sorry.

This menu is also all about shooting, just like the Shooting Menu. It's tricky to remember if something is in the Shooting Menu or the Custom Setting Menu.

I would rename these. If I did, I'd rename the Custom Setting Menu as the Camera Menu and the Shooting Menu as the Film Menu.

I use the D300 daily and rarely can remember in what menu Nikon has hidden what. I use the My Menu menu to put the items I use often.

[C] Custom Setting Bank

There are four selectable memory locations which store all the settings in this menu. They are called A, B, C and D. You may add your own names to them for convenience. I leave my A blank, and call B “Studio.”

Nikon did another bone-headed thing by naming the Shooting Menu Banks A, B, C and D (page 30), and then using the same names (A, B, C and D) for these Custom Menu

Banks. They should use 1, 2, 3 and 4 for one of them to prevent confusion. Don't worry: I have an engineering degree and these confuse me, too.

If you use remote flash, one of these banks is a good place to save the settings.

If you have anything set away from the defaults you'll see CUSTOM and A, B, C or D on the top LCD. Regardless of which is selected, if all the defaults are selected (you can do that with Reset below) you won't see CUSTOM on the top LCD.

There is no "SAVE" command. The bank you have selected is updated immediately as you change settings. If you've never selected one then you've been working in the A bank.

You can save names for each, but you can't lock any of these banks. If you have a bank you don't want altered, don't shoot actively with it. Anytime you change anything in the Custom Setting Menu you are changing the settings of whichever bank you have selected. To save a Bank you must work in another, since there's no way to lock them. Nikon confuses us all by letting us save names which stay locked while the settings wander all over the place as we change them in shooting.

I ranted about this back at Shooting Menu Banks (page 30).

[R] Reset custom settings

This resets everything in the selected Custom Shooting Menu Bank (just described above) to the defaults. The next six pages describe all the settings affected. Reset only affects the bank (A, B, C or D) in which you're working.

Play with everything below to your heart's content, since if you screw anything up this reset will fix it. Choose a bank you don't use and you won't change the bank you do use. Once you hit YES it resets. It doesn't ask "are you sure?" first.

I've divided the rest of this menu into several pages because it's so long. I've divided it up as Nikon did in its own submenus.

Custom Setting Menu: Autofocus

Settings a1 - a10: Autofocus

How to get here

Press MENU, go to the left and select up and down to the pencil icon. You'll then see CUSTOM SETTING MENU on the color LCD. Click down to a AUTOFOCUS and click to the right.

What it does

It sets many options for the advanced AF system.

What I change

I change a1 and a3, and leave the rest at their defaults.

a1 AF-C priority selection

At default, this lets you take fuzzy action pictures.

At the default "Release" setting, the D300 will fire anytime you press the shutter in AF-C mode, regardless of if it's in focus. Nikon's cameras usually can't run at their advertised frame rates and stay in focus at the same time.

At the default Release setting, most of your sequences will be out of focus! Set it to "Focus" instead and the D300 only will fire when it's in focus, ensuring a sharp sequence.

Release

The default mode, this lets the D300 free-run at 5 or 8 FPS, whether or not it's in focus. In this mode often only the first few shots of a sequence are in focus.

Release + focus

I use this. It's a halfway setting. It makes the D300 slow down and get most action shots in focus.

Focus

This makes the D300 wait until it's in perfect focus before firing any shot.

Because it waits for focus you can shoot long bursts and they'll all be in focus, but I find it too picky than the Release + Focus mode.

See also *How to Use the D300 AF System* (page 85).

a2 AF-S priority selection

At the default setting, the D300 only fires after getting perfect focus. Nikon call this "Focus Priority." It's the opposite of the default for AF-C mode, which lets the D300 fire at any time.

If you use off-brand or defective lenses that can't get the green focus confirmation dot in the lower left of the finder to light, the D300 won't fire. If you have a problem with this you might want to take this off the default setting.

Focus (Default)

The D300 only fires after it's gotten and locked perfect focus.

Release

The D300 fires anytime you press the shutter, regardless of if it's in focus or not. Try this setting if your D300 seems to lock up with some lenses.

See also *How to Use the D300 AF System* (page 85).

a3 Dynamic AF Area

There is a lot of crazy stuff here. I use 51 Points (3D-tracking) which lets the D300, in the crosshair and AF-C modes, track a target and show you what its doing. See *How to Use the D300 AF System* (page 85) for more.

a4 Focus Tracking with lock-on

This selects how long the D300 focus tracking system waits to start looking for the subject if it loses it behind a tree or person. This only applies in the AF-C (continuous) AF position.

I leave this alone.

Long

The D300 presumes the subject has run behind something big, like a billboard, if it loses it. The AF system keeps running without it for a while, expecting the subject to return on the same path from before. In LONG the AF system has a lot of patience for subjects disappearing.

Normal (default)

The D300 presumes the subject has run behind something like a tree or another player if it loses it. The AF system keeps running without it for a little while, expecting the subject to return on the same path from before.

Short

The D300 has little patience for subjects evaporating. It doesn't wait very long after it loses your subject to start looking for it again from scratch.

Off

The D300 wastes no time tracking. If it loses your subject it immediately starts looking around again. You might want to use this if you're shooting a bunch of fixed things at varying distances one after another, but I use AF-S for that.

I've never moved this setting from its default of Normal.

a5 AF activation

This allows the AF system to ignore the shutter button.

Shutter/AF-ON

In its default position, the AF system turns on when you press the shutter or the AF-ON button on the back.

AF-ON only

The D300 won't focus when you press the shutter. It only focuses when you press the AF-ON button on the back.

I've never used this. It might be helpful with an AF telephoto that lacks easy manual override. You'd use the AF button to focus, and remove your finger to lock.

a6 AF Point Illumination

This controls when, or if, the AF points light up in the finder.

Auto (default)

They light up as they need to. I leave it here.

ON

Always on (when the meter is on).

OFF

Always off.

a7 Focus point wrap-around

AF point selection normally stops when you hit the edge of the constellation of AF areas.

No wrap (default)

If you keep pressing the selector to the left it stops at the far left. I prefer it this way.

Wrap

Wrap lets your selection wrap around to the other side of the AF areas!

a8 AF point selection

AF51 (default)

You may select any of the 51 AF points.

AF11

You only get to select 11 of the points. You don't have to click around as much with the Big Rear Thumb Switch, but you only get to select 11 of the 51 points. These 11 points are similar to the 11 points of the D2, F6, and D200.

a9 Built-in AF-assist illuminator

This lets you deactivate the annoying AF assist light. Normally it comes on in the dark to help focus. Turn off the AF assist light if you want to keep a lower profile.

a10 AF-ON for MB-D10

This lets you choose what the AF-ON button does if you have an MB-D10 grip when shooting vertically.

Custom Setting Menu: Metering/Exposure

b1 - b6 Metering/exposure

How to get here

Press MENU, go to the left and select up and down to the pencil icon. You'll then see CUSTOM SETTING MENU on the color LCD. Click down to b METERING/EXPOSURE and click to the right.

What it does

Here we set important metering and ISO options.

What I change

I change b1 and b2. I leave the rest alone.

b1 ISO sensitivity step value

This defaults to 1/3 stops. That's silly.

I set mine to change the ISO in full stops. I shoot at 200, 400, 800, 1,600 or 3,200 and don't waste time in-between. By not bothering with the in-between thirds I can select my ISOs with fewer clicks.

b2 EV steps for exposure control

This defaults to 1/3 stops. I don't use this, except in manual exposure.

In the Auto modes I set it to full (1) stops. This lets me make my settings faster, since they take fewer clicks. Depth of field or motion control doesn't need more precision than a full stop.

Even though the D300 sets exposure steplessly, finder and EXIF readout of apertures and shutter speeds in auto modes is rounded to the nearest full stop. I prefer this; I have enough to worry about without having to do mental gymnastics to realize that f/6.3 is the same as f/5.6.

Design flaw: Ideally Nikon would provide separate settings for manual and auto exposure. I'd set 1/3 stops for manual exposure and full stops in auto exposure (P, S and A modes). You need the precision in manual mode, but not in the auto modes, because the values

chosen by the D300 are set steplessly regardless of how they are displayed.

b3 Exp comp/fine tune

Leave this at 1/3. It's silly to fine tune in full stops. I tune in thirds.

b4 Easy exposure compensation

This lets you alter your exposure by turning the front dial without having to press the Exposure Compensation (lighten/darken) button (page 20).

I love "Easy," which is the name of this feature, but it's too easy. I hit the dial too often by accident, so I don't use it. I leave it at its default of OFF.

RESET is a great idea if you use the EASY setting. RESET automatically resets the exposure compensation to zero every time you turn the camera back on. This is a very good idea. Otherwise you may lose a lot of shots from having a wrong value set from yesterday's last shot.

b5 Center-weighted area

This sets the diameter of the sensitive part of the center weighted meter. These settings only take effect when you've selected center weighted metering.

I never use center weighted metering, so I certainly never play with this.

You also have the option of metering from the entire image, called "Average."

These modes went out in 1983 when the Matrix Meter was invented, but old-timers cling to these so Nikon leaves them in. I always use Matrix.

b6 Fine tune optimal exposure

Don't do this!

This is a service adjustment that allows you to make permanent tweaks to the exposure meter calibrations. These settings do not show up on the control panels!

You'd use this if your camera were defective, or if you did something weird like convert it to infra-red.

If you dare do this, you can tweak the meters in sixth-stop increments, with different adjustments for each of the Matrix, Center-Weighted and Spot meters.

Don't do this. This should be hidden. If your shots are too dark or light you should have your camera repaired, or use the regular Exposure Compensation button (page 20).

Custom Setting Menu: Timers/AE Lock

c1 - c4: Timers/AE lock

How to get here

Press MENU, go to the left and select up and down to the pencil icon. You'll then see CUSTOM SETTING MENU on the color LCD. Click down to c TIMERS/AE&AF LOCK and click to the right.

What it does

AE lock is important to getting perfect files straight from the D300 without editing.

Timers optimize battery life vs. convenience.

What I change

I change all of them except c1. I leave c1 at its default.

c1 Shutter-release button AE-L

This lets you lock the exposure with the shutter button, like a point-and-shoot camera. You don't want that, so leave this one alone.

The D300 has a dedicated AE Lock button (page 64). You don't want the shutter button to lock exposure.

c2 Auto meter-off delay

This sets how long the meter stays awake.

Shorter times will save the battery. Set it longer if you have to keep hitting the shutter to wake the meter in the middle of composing shots. I use 8 seconds.

c3 Self-timer delay

This sets the self-timer delay.

10 seconds is for taking Christmas card photos of yourself.

2 seconds is for replacing a \$100 cable release when using a tripod with long exposures.

c4 Monitor-off delay

This sets how long the rear LCD stays lit.

Unlike the D700, which offers separate settings for different modes, the D300 only offers one setting for all modes.

Custom Setting Menu: Shooting/Display

d1 - d11 Shooting/display

How to get here

Press MENU, go to the left and select up and down to the pencil icon. You'll then see CUSTOM SETTING MENU on the color LCD. Click down to d SHOOTING/DISPLAY and click to the right.

What it does

This menu is a random jumble. These ideally belong in other menus.

What I change

I change d1 and leave the rest alone.

I'm sorry that Nikon put a menu called Shooting inside a menu called Custom Setting, since it has nothing to do with the larger Shooting Menu. This is something else that needs to be reorganized. Sorry.

d1 Beep

This is the idiotic and annoying focus confirmation beep.

The D300 is an amateur camera, so therefore this defaults to ON.

For God and man's sake, please set this to OFF. Otherwise you annoy everyone and sound like a moron with your camera beeping for no good reason.

d2 Viewfinder grid display

This activates hairlines in the finder. Set them ON to help keep everything straight and level, or OFF to clean up the finder.

d3 Viewfinder warning display

This sets whether or not the low battery icon shows in the finder when needed. I have no idea why you'd want to turn this off.

d4 CL mode shooting speed

This selects the maximum frame rate of the CL (continuous low, page 12) frame advance setting. I leave mine on 3 FPS.

d5 Max continuous release

This selects the maximum number of continuous shots you can make in the CL or CH continuous release modes.

It defaults at 100, and I have no reason to set it to be less. If I want fewer shots, I take my finger off the shutter release.

d6 File number sequence

This ensures your file numbers keep counting up. Leave this at its default of ON.

If you change it to OFF, you'll start from DSC_0001 every time you reformat. Over time you'll have hundreds of photos on your computer all called DSC_0001. It will drive you crazy and it will be too late to do anything about it.

If you ever do want to reset to DSC_0001, use the Reset option.

d7 Shooting info display

Auto lets the D300 light up the 3" rear LCD with your shooting data in black on light cyan in daylight, or gray on dark blue at night.

Manual lets you fix it at either kind of display.

d8 LCD illumination

At default, the top LCD only lights up when you spin the light button located with the power switch. I leave this setting this way.

If you choose ON, the top LCD lights up even in daylight.

d9 Exposure delay mode

This makes the D90 wait 4/10s of a second to release the shutter after you press it.

It flips up the mirror first. Try this if you're using a long lens on a tripod with exposures of between 1/60 and 1/2 second, where mirror shake is the biggest problem.

The Mirror Up mode (page 12) is better for this.

d10 MB-D10 battery type

Forget this if you use the usual gray rechargeable EN-EL3e battery packs in the grip.

If you use AA batteries, set this and you'll get more accurate battery level readings.

Leave this alone if you're using throw-away AA alkaline batteries or the EN-EL3e.

Change it if you're using throw-away AA lithium, Ni-MH AA, or crappy throw-away "heavy duty" AA cells, which Nikon graciously calls ZR6 (AA Ni-Mn).

d11 Battery order

If you change this and you're using the grip, this lets you run down the battery in the camera first, so you have to remove the grip to change it.

Leave this setting alone, so it runs down the battery in the grip first, and only then uses the battery in the camera. This makes much more sense, since it's a lot easier to change the battery in the grip, and when you pull the grip, the battery in the camera is going to have a lot more charge.

Custom Setting Menu: Bracketing/Flash

e1 - e7: Bracketing/flash

How to get here

Press MENU, go to the left and select up and down to the pencil icon. You'll then see CUSTOM SETTING MENU on the color LCD. Click down to e BRACKETING/FLASH and click to the right.

What it does

It sets flash function and completely unrelated bracketing options.

What I change

I change e4, and leave the rest alone.

e1 Flash Sync Speed

This lets you select a slower maximum flash sync speed. You might want to choose a slower speed to let in more ambient light, but I select that with the next option.

This menu lets you select 1/60 through 1/250.

It also is where you must select AUTO FP if you wish to use the trick FP high-speed sync modes. For more on this topic, go to <http://kenrockwell.com/tech/syncspeed.htm#fp>.

e2 Flash Shutter Speed

This selects the slowest shutter speed with flash in the P and A modes.

1/60 is default. I usually set about 1/30 or 1/15 to let in more ambient light to prevent my backgrounds from blacking-out.

Slower speeds like 1/8 let the backgrounds stay much lighter, but greatly increase the chances of motion blur.

e3 Flash cntrl for built-in flash

This sets what the built-in flash does.

TTL (default)

By default it works like a TTL flash. That's good; it works great.

M (Manual)

You set the flash brightness manually. I use this mode if I'm shooting my studio strobes and using the built-in flash to trigger my power pack.

RPT (idiotic repeating strobe mode)

Har har, you can start you own hamster disco with this one.

C (commander mode)

This is how to set the built-in flash to become the commander to talk to a wireless remote flash, which today is the SB-600, SB-800 and SB-900.

Under this menu you can set two groups of external flashes separately, as well as how much light comes from the built-in flash.

"Comp" is the exposure compensation (brightness) for each of these groups of lights.

You can set lighting ratios of remote flashes, right from the D300!

Trick: You probably have to set Channel 3, not the default of 1, to get this to work! My SB-600 defaults to channel 3. You can use any channel, but the flash and camera have to match. Different channels are handy if you have a lot of photographers shooting in the same arena. No, I have no idea why the D70 defaults to 3 as does the SB-600, and the D300 defaults to ch. 1.

Leave the rest of it alone. Set your flash for remote operation, and away you go.

See my page (<http://kenrockwell.com/nikon/ittlslave.htm>) on how to use remote flash. It's an incredible feature, and it's free if you have an SB-600, SB-800 or SB-900.

e4 Modeling Flash

Turn this off!

Otherwise you'll go blind, because at its default, a design flaw, it fires a zillion flash shots as a modeling light if you tap the Depth-of-Field preview button.

e5 Auto BKT Set

This controls what changes when you have the D300 bracket.

You can have everything change exposure, or just the flash, or the ambient light, or have the WB bracket.

I never use these. Bracketing is for the weak. Use your LCD and look at your pictures. This feature is a left-over from film cameras, and real photographers never used bracketing with film either.

e6 Auto bracketing (mode M)

This controls what changes when letting the D300 bracket itself in manual exposure mode.

I never use this.

e7 Bracketing order

This sets the order in which the various bracketed exposures are made.

Custom Setting Menu: Controls

f1 - f10: Controls

How to get here

Press MENU, go to the left and select up and down to the pencil icon. You'll then see CUSTOM SETTING MENU on the color LCD. Click down to f CONTROLS and click to the right.

What it does

Here lie some of the most important tricks I use on my D300. These change what some of the buttons and knobs do.

What I change

I change a lot of these. Read on.

f1 Multi Selector Center Button

This is a cool one. People see this on a workshop, and think that it's just made the whole workshop worthwhile, just for this trick.

This lets you select what happens when you press the center of the rear thumb selector.

You may select different things for shooting and for playback.

In shooting I prefer to have mine select the center AF area.

In playback there is a very clever trick I suggest everyone set:

Trick: under playback mode, select ZOOM ON/OFF. Now pressing the center of the selector zooms in. I choose MEDIUM.

Trick of tricks: Once you set this and use it, the rear dial flips through all the shots at the same position and magnification (presuming you turned on this feature in function f7 below)! I do this all the time.

It's great for selecting which shot is sharp or not. Sadly once you use the Delete key the D300 reverts to non-zoomed mode, so you'll have to zoom and scroll back to the same spot to continue in-camera editing.

f2 Multi-Selector

You can set the rear thumb selector (page 25) to turn on the meter or the AF system.

I never use this.

f3 Photo Info/Playback

This lets you choose which directions do what on the rear thumb when playing back.

You can select this switch to match Canon or Nikon's convention.

In other words, it's your choice of tapping left and right or up and down to go forwards and back or to see the data about an image.

f4 Assign FUNC. button

This selects what the magic Function Button does. These settings are so helpful I wish I had several FUNC buttons, or the ability to assign these to other buttons I don't use.

You only get one choice at a time. The D200 let you do two things at once, but not on the D300, D700 or D3. Here is what they do:

FUNC button press

Preview

Depth-of-field preview.

Fv lock

Tap the FUNC button, the flash goes off and meters itself - once. Now every succeeding shot needs no preflashes! This means that, so long as your distance stays unchanged, that you'll get instant shutter release, and more importantly, no blinking from the preflashes. This choice fires the preflashes only once, and uses that information for every succeeding shot until you reset it.

It resets itself when the meter turns off, or if you tap the Function Button again.

AE/AF lock

Locks exposure and focus.

AE lock only

Locks exposure.

AE lock (Reset on release)

Locks exposure and holds it until you take a picture, the meter turns off or you press FUNC again.

AE lock (Hold)

Locks exposure and holds it until the meter turns off or you press FUNC again.

AF lock only

Locks focus.

Flash Off

Doesn't fire the flash so long as you hold the FUNC button.

Bracketing burst

In single frame mode, the D300 goes off and shoots an entire bracketing sequence as set elsewhere.

Matrix

Goes into Matrix metering.

Center-Weighted

Goes into CW metering.

Spot

Goes into spot metering when held

FUNC button + dials

1 step spd/aperture

I select this in the Exposure Custom Settings Menu (page 50 onwards), but here you can force the D300 to shift in full stops as long as you hold the FUNC button.

Chose non-CPU lens number

You use this to select easily among the various manual-focus lenses you've programmed under enter non-CPU lens data (page 72).

BKT

Press the FUNC button and spin the dials to select how many bracketed shots, and at what increments.

Dynamic AF Area

Hold FUNC and spin the dial to select Dynamic AF Area mode (the crosshair position of the AF Area Mode Switch, page 26)).

f5 Assign preview button

This selects what the depth-of-field preview button does. If you chose anything other than Preview, you usually lose the preview function.

Many of these are the same as the options for the FUNC button. There are more clever functions than there are buttons to which to assign them.

I leave this one on Preview.

Preview button press

Preview

Depth-of-field preview.

Fv lock

Tap the preview button, the flash goes off and meters itself - once. Now every succeeding shot needs no preflashes! This means that, so long as your distance stays unchanged, that you'll get instant shutter release, and more importantly, no blinking from the preflashes. This choice fires the preflashes only once, and uses that information for every succeeding shot until you reset it.

It resets itself when the meter turns off, or if you tap the preview button again.

AE/AF lock

Locks exposure and focus.

AE lock only

Locks exposure.

AE lock (Reset on release)

Locks exposure and holds it until you take a picture, the meter turns off or you press preview again.

AE lock (Hold)

Locks exposure and holds it until the meter turns off or you press preview again.

AF lock only

Locks focus.

Flash Off

Doesn't fire the flash so long as you hold the preview button.

Bracketing burst

In single frame mode, the D300 goes off and shoots an entire bracketing sequence as set elsewhere.

Matrix

Goes into Matrix metering.

Center-Weighted

Goes into CW metering.

Spot

Goes into spot metering when held

Preview + command dials**1 step spd/aperture**

I select this in the Exposure Custom Settings Menu (page 50), but here you can force the D300 to shift in full stops as long as you hold the FUNC button.

Chose non-CPU lens number

You use this to select easily among the various manual-focus lenses you've programmed under enter non-CPU lens data (page 72).

BKT

Press the FUNC button and spin the dials to select how many bracketed shots, and at what increments.

Dynamic AF Area

Hold FUNC and spin the dial to select Dynamic AF Area mode (the crosshair position of the AF Area Mode Switch, page 26).

f6 Assign AE-L/AF-L button

This sets the function of the AE-L/AF-L button (page 23) on the rear of the D300. It also can be set to many of the same functions as the other buttons.

I set mine to AE lock only. This way I point the camera where I want my exposure, and hold the button until I recompose and make my exposure.

AE-L/AF-L button press**Preview**

Depth-of-field preview.

Fv lock

Tap the AE-L/AF-L button, the flash goes off and meters itself - once. Now every succeeding shot needs no preflashes! This means that, so long as your distance stays unchanged, that you'll get instant shutter release, and more importantly, no blinking from the preflashes. This choice fires the preflashes only once, and uses that information for every succeeding shot until you reset it.

It resets itself when the meter turns off, or if you tap the AE-L/AF-L button again.

AE/AF lock

Locks exposure and focus.

AE lock only

Locks exposure.

AE lock (Reset on release)

Locks exposure and holds it until you take a picture, the meter turns off or you press AE-L/AF-L again.

AE lock (Hold)

Locks exposure and holds it until the meter turns off or you press AE-L/AF-L again.

AF lock only

Locks focus.

AF-ON

Focuses while you press the AE-L/AF-L button.

Flash Off

Doesn't fire the flash so long as you hold the AE-L/AF-L button.

Bracketing burst

In single frame mode, the D300 goes off and shoots an entire bracketing sequence as set elsewhere.

Matrix

Goes into Matrix metering.

Center-Weighted

Goes into CW metering.

Spot

Goes into spot metering when held

AE-L/AF-L button + dials

Chose non-CPU lens number

You use this to select easily among the various manual-focus lenses you've programmed under enter non-CPU lens data (page 72).

BKT

Press the FUNC button and spin the dials to select how many bracketed shots, and at what increments.

Dynamic AF Area

Hold FUNC and spin the dial to select Dynamic AF Area mode (the crosshair position of the AF Area Mode Switch).

f7 Customize command dials

This allows some very clever things you'll appreciate.

Reverse Rotation

So what.

Change main/sub

So what.

Aperture Setting

Lets you set apertures with the rings on the lens if you desire.

Menus and playback

Set this!

If you do, the rear dial now can scroll quickly among your shots, and the front dial scrolls among the various data screens. This is another trick that workshop participants say makes the whole trip worthwhile.

f8 Release button to use dial

This lets you tap a button once to adjust instead of having to keep holding it. You can keep adjusting until you tap the shutter, at which time it cancels.

I don't use this.

f9 No memory card?

Nikon defaults this to the wrong position so that D300s can be shot in camera stores without CF cards. Be sure to set this to LOCK so that you'll never be shooting blanks!

If you don't set this away from the default of OK, you could shoot for a week and, if you don't try to play back other shots, might not notice you have no card!

Nikon does put up a red **DEMO** warning flag on playback, and the fact that they call it Demo means that you know it was done to help old-style retail camera stores that no longer exist, not to help photographers.

Earlier model cameras used to default to the correct LOCK position, but this meant that retail camera stores needed salespeople who knew how to use a camera to set it up so it could shoot in-store. Those days are gone: the default of ENABLE is so these can be put

out by the janitor at Best Buy today for people to try.

Don't forget to set this to LOCK!

f10 Reverse indicators

Nikon's exposure meters have always read backwards. More exposure goes to the left, and less exposure goes to the right. Huh?

Nikon's rangefinder cameras of the 1940s had shutter dials and aperture rings which rotated in one direction. No big deal, but when Nikon added meters to cameras in the 1960s, the meters had to read to make sense as you moved the dials, so Nikon's meter needles and bar graphs have always gone in the wrong direction. (The superior vertical bar graphs of the D3, D2 and F6 don't have this problem: up is more.)

Thankfully Nikon has never changed this, since in whatever decade they do, there will be massive confusion among all Nikon users familiar with the (wrong) way it's been forever.

For newcomers, you can use this menu to flip things back to normal, as Canon has done it since their EOS cameras of the 1980s. If you do, more goes to the right.

Custom Setting Menu: Setup Menu (wrench)

How to get here

Select the Set Up Menu by pressing MENU, moving to the left and then up or down to select the wrench icon. You'll then see SET UP MENU on the color LCD.

What it sets

This sets the usual housekeeping like rotation, the clock and file numbering.

What I change

This menu contains the secret message mode I use to encode my © and contact information into every file shot with my D300.

I also read the Battery Info often. You can't change it, just read it.

Format memory card

This duplicates the function of the two red FORMAT buttons (see page 19).

I format my card every time I put it in my D300, and every time I go out shooting.

It's always best to be using a freshly formatted card.

To be safe, always reformat the card in the D300 after the D300 has been connected to any computer.

Of course formatting completely wipes any photos off your card. Be sure to have these photos transferred and backed up to at least two locations before formatting. See my Field Workflow page at <http://kenrockwell.com/tech/field-backups.htm> for more.

LCD Brightness

This changes the midtones on the LCD. It doesn't appear to change the intensity of the backlight. It seems to be a gamma (contrast) control.

For the adjustment to take effect you must remember to hit OK after making a selection.

I leave mine at 0.

Clean image sensor

This setting runs the self-cleaning function.

It also allows you to set it to run every time the D300 is turned off or on, just like Canon. I wouldn't do this, since it wastes a lot of time.

Lock mirror up for cleaning

This setting is for mechanical cleaning. Don't ever touch the sensor with sensor swabs or any of that crap!

I clean my cameras with a vacuum, and send them in to Nikon after a few years if the dirt gets really bad.

Video Mode

This sets the format of the analog video output.

Use NTSC (525 lines, 59.94Hz) in the Americas and Japan, and PAL (625 lines, 50Hz) in Europe.

This output will always look much worse on a TV or projector than images do on a computer or projected through a computer. For more on this topic, read *Why Images Look Awful from the Video Output* at <http://kenrockwell.com/tech/video-out.htm>.

HDMI

This sets the format of the HDMI digital TV output. I leave it on Auto, and unlike the crappy analog video output, it looks fantastic on a big HDTV.

World Time

This is where you set the date and time.

There is a nice map for finding time zones. You can swap among time zones without having to reset the seconds, a boon for me – I keep my D300 set to the exact second.

Language

This sets English or other languages. Set yours to Swedish and see if you can navigate back to English. Fun!

Unfortunately Nikon figured this out, and if you do, the Language option, which before was only listed as Språk in Swedish, also is listed as (Language) in every language mode, even Korean.

Image Comment

This lets you add a secret text message into every file. Mine is set to (c) KenRockwell.com with my phone number! You see this text looking at the EXIF data in software on a computer. Sadly Nikon provides no real © symbol.

You set this by going to MENU > Set Up Menu > Image Comment > Input Comment > (add your message like you did on 1970s video games) > Enter. You must hit ENTER or it will forget everything you just did!

To edit or remove a character, select it in the Input Comment screen by holding the checkerboard button and clicking the big thumb selector. Select a new character with the same selector and press the center of the selector to add it. Press the Trash button to delete a character.

When you get your text message spelled out, go to Attach Comment and hit SET so a small checkmark shows. Now go to and select DONE. If you forget to check Attach it won't attach, and if you forget to hit DONE it will also forget everything you just did. Sorry, I don't write the firmware.

It's great having everything you shoot have your contact info embedded. It also allows you to prove ownership in a third-world country when catching a thief with your camera. Help the cop go through the menus and read your personal ID information.

Auto Image Rotation

This sets a flag in vertical images which keys most software to display the image vertically.

It does not actually rotate the images; it just sets a flag. Someday the camera's firmware will work properly and rotate the image itself, but no camera does this yet.

I perform lossless rotation to my images later in iView.

USB

This controls what the USB output does.

I leave mine at MSC, Mass Storage, so if I plug my D300 into my Mac, the DF cards just pop up as hard drives.

Dust Off Ref Photo

This is used to take a picture of the dust on your sensor. If you pay Nikon another \$100 for Nikon Capture software you can use this to erase the dust more easily from your images shot in raw. You people know who you are. I don't do this!

I've made 40,000 shots on my D300 and have little problem with dust. Thankfully the D300 sensor has a filter far enough removed from the imaging surface to throw dust sufficiently out of focus.

Battery Info

I use this all the time.

Bat. Meter

The Battery Meter reads the battery charge to the nearest one percent. This is the same battery data shown on the top LCD display, but the top gauge only has 5 bars to read to the nearest 20%.

Pic. Meter

The Picture Meter shows how many images have been shot on this charge.

Charging life

Charging Life shows the battery's health. A new one reads 0; an almost dead one reads 4.

I've made many tens of thousands of shots on my D80, D200 and D300 which share the same batteries, and my batteries all read "new." The trick is not to run them to the way down before charging. Read my article "Getting Great Battery Life", at <http://kenrockwell.com/tech/battery-life.htm> to see how I do it.

Wireless transmitter

This is for people using the corny Nikon WT-4 data transmitter.

Image Authentication

This is for people using Nikon's \$500 Image Authentication software. to try to prove that resulting image files haven't been twiddled with. It slows things down, so don't use this unless you're using the D300 for evidence.

Save/load settings

This lets you save almost all your D300 settings to your CF card.

Once there, you can save to your Mac, and put them back on a card later, and restore yourself into another D300, or your own D300 after lent to a friend.

GPS

This lets you make the meter stay on all the time if you wish.

If the meter turns off, the D300 needs to resync communication with the GPS each time.

Non-CPU (Manual Focus) Lens Data

This is how you get color Matrix metering, automatic exposure and EXIF data compatibility with old AI manual focus lenses.

You enter the focal length and f/stop via this menu. You also get aperture data in the finder and can use manual and Aperture priority exposure.

Trick: You can set the FUNCTION button to select among different lenses without needing a menu as explained on page 61.

AF fine tune

If you can't figure this out on your own and have to read directions for this over the Internet, do not try this at home. You will probably make things worse.

Older AF systems often had offsets with some samples of lenses. Offsets meant a constant focus error, often called "front focus" or "back focus" by laypeople.

The D300 rarely has any problems with this, unlike earlier cameras which may have needed this adjustment, but didn't have it.

If your pictures aren't sharp, 99 times out of 100 its because you, not the camera, are doing something wrong. For instance, most sports shots are out of focus because people don't know how to set the AF system properly (see page 85 for more on this topic).

Before you start screwing with this, which should not have been made a user adjustment, read How to Fix Unsharp Images in its entirety at <http://kenrockwell.com/tech/unsharp.htm>.

If you still see a consistent offset (10 shots out of 10, not just one shot here and there), then feel free to adjust this. Its obvious to those with the skill required to use it properly.

Because of this, I'm not going to explain it. Keep your cotton-picking fingers off of this unless you really know what you're doing.

If you do know what you're doing, you need to look at the results on a big computer screen at 100%. The D300 is excellent, but can't show enough of the image big enough to let any of us see enough with enough precision to see the results of this adjustment.

If you do know what you're doing, it's sad to report that this adjustment isn't smart enough to be able to adjust lenses at different distances (like adjust at infinity, 30 feet, 10 feet and three feet) or at different zoom settings. Lenses need different adjustments as these two variable change.

If you attempt this tweak, you must make and compare at least ten shots at a time. The D300 AF system isn't repeatable in the precision at which you'll be looking, so you need

to make multiple shots at each setting and average what you see. Simply taking a few shots and seeing what happens will undoubtedly lead you to making the wrong adjustments, or more fun, lead you to early insanity because you'll be attempting to quantify variations which are random shot-to-shot variation.

For instance, I did borrow a 28-70mm f/2.8 which needed adjustment at the long end, but not the short end. I adjusted it at 70mm, and it wasn't quite as good at 28mm anymore because it was fine at 28mm to begin with.

Firmware Version

This lets you confirm if your camera is up-to-date with Nikons' free firmware updates.

As of August 2008, the D300 sitting in front of me reads A 1.03 and B 1.03. There is always newer firmware; I'm too busy shooting to load it.

Retouch Menu

How to get here

Select the Retouch Menu by pressing MENU, moving to the left and then up or down to select the brush icon second from the bottom. You'll then see RETOUCH MENU on the top of the color LCD.

You also can hit OK while an image is playing.

What it sets

This is a silly menu that lets you twiddle with images you've already shot. The originals are unaltered. The D300 creates new versions of the images and saves them.

Concatenation: The D300 is sneaky enough to know if a file was created with these trick modes, and often won't let you apply the same filter twice. You can concatenate different filters.

If your original image is an NEF or TIFF, it will be saved as a FINE LARGE JPG. Otherwise, it's saved the same way as the original image.

Firmware Defect: The new images are saved with a file number one more than the most recent image. The EXIF create time is unaltered, so you'll have to sort images by create time if you can.

This defect means that the file numbers of the newly created versions are scrambled from the originals. If you're playing with the most recent image the file numbers are close, but if you're playing with an earlier file, its file number will be unrelated to the original.

The correct way to have done this would be to retain the same file name and append -edit, -edit1, -edit2, etc. For instance, if you make a new version of DCS_0123.jpg, the new file might be called DSC_5837.jpg. Good luck sorting them out! If done correctly, the new version would be named DSC_0123-edit.jpg.

The D300 is improved from earlier cameras. At least the files all begin the same way as the original file, regardless of how you set it. Pity the D40 owners who use these Retouch gimmicks, because the D40 changes the file prefixes as well!

Here's what each does.

D-Lighting

This lightens dark shadows. It doesn't touch highlights.

You have three levels of lightening: Low, Normal, and High.

If you set ADR to NORM for shooting as I do, you shouldn't need this. Remember: shadows are supposed to be dark.

Red-Eye Correction

This attempts to rectify flash-induced red eyes.

This filter is sneaky enough to know if you used flash or not to make the image, and won't let you use this filter if you didn't use flash.

I've never had a problem with red-eye with my D300, so all the better. When I was able to cause red-eye, this filter only corrected half of the eyes!

Trim

This creates cropped versions of images.

No pixels are moved or changed in size.

Trim removes unwanted pixels from the sides of an image and saves a smaller image.

Monochrome

This creates black-and-white images.

It has three modes:

- **Black-and-White**
- **Sepia** (Brown-and-white)
- **Cyanotype** (Blue-and-White)

Have fun!

Filter Effects

This creates images with warmer colors. You've got your choice of:

Skylight: Very slightly pinker.

Warm filter: Slightly warmer (more orange). The Warm filter usually improves casual images. You can forget the skylight filter.

Color Balance

This one's slick. It calls up a better control panel than Photoshop's color balance tool, which dates from the 1980s.

Nikon's tool reminds me of what we have on million-dollar Hollywood telecine color correction machines used to color correct motion pictures.

The Nikon D300 shows three histograms (reminiscent of Tektronix' WFM700 waveform monitors) and the D300's Up/Down/Left/Right key becomes the color correction track ball. Click it left and right to alter blue-red, and up down for magenta - green.

If you have something neutral, watch the waveforms, oops, histograms, until they are about equal. Left - right on the Up/Down/Left/Right key slides the red and blue in opposite directions, and green - magenta slides the red and blue equally left or right. The green stays put.

This allows you to correct in any color, and if you want to warm an image (that I do most often in Photoshop), allows more flexibility than the fixed Warm filter above.

Side-by-side comparison

This lets you compare an original image with versions that have been messed with above.

“My Menu” Menu

How to get here

Press MENU, scrolling to the left and selecting the bottom option which has an icon resembling another menu with a check. You'll see MY MENU on the color LCD.

What it does

My Menu lets you put all the menu items you actually use in one place.

What I do with it

This feature helps immensely, since Nikon hides so many important menu items in weird locations.

I have my My Menu menu programmed to the following:

ISO sensitivity auto control

I turn ISO AUTO on and off here as I go between auto and manual exposure. I'll be able to remove this whenever Nikon patches the firmware defect that leaves AUTO ISO (page 39) active in manual exposure mode (page 18).

ISO sensitivity settings

In this menu I set the lowest shutter speed depending on what I'm shooting. I set 1/100 if shooting people, 1/250 if shooting a long tele, and 1/8 if shooting wide landscapes.

Set Picture Control

My top item, to which I can get by assigning the FUNC button, lets me select among the various picture controls. I use my VIVID setting with +3 saturation for photos of things, and NEUTRAL with +1 saturation for photos of people.

Active folder

I use this to create a new folder for each subject I shoot.

Image review

Sometimes I want to see each shot when shooting slowly, some times when shooting bursts I don't want the monitor popping in by itself. Here is where I set this.

Ideally Nikon needs a firmware improvement whereby we can switch between these by holding the Play button for several seconds, but Nikon hasn't gotten there yet.

Non-CPU lens data

Here is where I set and select among my various manual focus lenses. You can skip this if you only shoot AF lenses, or just one manual lens. The D300 recalls the last setting whenever you pop on a manual lens, so if you only have one, set it and the D300 recognizes it by magic. If you use two or more (or use a manual-focus zoom), this lets you select which lens or focal length.

Battery info

If you're the sort of person like me who watches your digital clocks to be sure they count up properly, this menu lets you read your battery power to the nearest single percent. It also tells you how many shots you've already made on this charge, which can help you predict how many shots are left. You'll need Algebra to calculate remaining shots; the D300 doesn't do it for you.

To calculate, remaining shots = (pic meter) / (1-(bat. meter/100))

Charging life is the health of your battery. I've made many tens of thousands of shots on my many Nikons, and have never seen it read anything other than 0 (new). See my page on How to Keep Your Batteries Healthy at <http://kenrockwell.com/tech/battery-life.htm>.

A. Picture Control Settings

Introduction

My Nikon D300 and Nikon D3 let me get wilder colors than any previous Nikon, including film cameras loaded with Fuji Velvia 50. For examples, see my web page at <http://kenrockwell.com/nikon/d300/picture-control.htm>.

Not that you may want colors as wild as mine, but I do. Art is the expression of imagination, and I dream in very vivid colors. You probably prefer more a polite color rendition.

This will show you how to set your D300 as you like.

Wording

Last year, Nikon called the settings for saturation, contrast and sharpness "Optimize Image." As of late 2007, Nikon now calls these settings "Picture Control."

Don't let Nikon's typical lack of clarity confuse you. Picture Controls are simply the settings for contrast, sharpness, saturation and etc.

Canon also calls them something else each year, like User Defined (2002-2006) and now Picture Styles (2007).

How to Set Color Saturation

1. Press MENU.
2. Select SHOOTING MENU (camera icon on left).
3. Go right (into the menu selections) and go down to the next page to SET PICTURE CONTROL.
4. Go right to the four standard options, and click two down to VIVID.

VIVID is a good option. VIVID on the D3 and D300 is as vivid as the wildest way I could set earlier first-generation Nikons.

Since I want colors loud enough to deafen a heavy-metal drummer, I crank it up from VIVID.

Once at VIVID, click right to the menu with the sub-options of Saturation and Contrast.

Click down to Saturation, and peg it three clicks to the right.

Hit OK, otherwise your modification isn't remembered.

You now have altered the VIVID setting to its maximum. In the menus you'll now see it called VI*, the * signifying that you've messed with Nikon's default for VIVID.

I always set Adaptive Dynamic Range (ADR, mislabeled as Adaptive D-Lighting by Nikon in the menus) to NORMAL. See my web page at <http://www.kenrockwell.com/nikon/d300/dynamic-range.htm>. This sets the contrast and brightness automatically based on the Zone System, removing those choices from your menu options. For more on the Zone System, visit <http://www.kenrockwell.com/tech/zone.htm>.

My Favorite Settings

I always shoot with ADR at NORMAL on the D3 and D300, or AUTO on the D700 and D90. This eliminates the ability to control the brightness (gamma) and contrast settings, since they are optimized automatically by the ADR system.

For things

I set the sharpening to 5.

For photos of things, I usually start at VIVID and crank the saturation all the way up to +3. This gives me the psychedelic look I love.

For accurate product colors in the studio

I use STANDARD.

I prefer sharpening set to 5.

I honestly have no idea if Nikon's ADR can work with studio strobes, so I turn it off and set contrast down to -1.

For people

For photos of people, I use NEUTRAL and set the saturation to +1. I prefer sharpening set to 5.

STANDARD is less wild than VIVID, and NEUTRAL has even lower contrast.

You may prefer STANDARD and +1 or +2 Saturation.

Play with this: we all will prefer something different.

How to Save Settings (Picture Controls)

Press MENU.

Select SHOOTING MENU (camera icon on left).

Go right (into the menu selections) and go down to the next page to MANAGE PICTURE CONTROL (one below Set Picture Control).

It's obvious from here. I name my favorite wild setting as BOLD, and it recalls as C-1 (for custom-1) in the menus.

Switching Between Picture Controls

I bounce back and forth between picture controls depending on the subject. If I make a snap of my kid and then turn to photograph a building, I have to change Picture Controls.

A photo of my kid looks nasty made at VIVID +3, and a photo of a thing looks boring at NEUTRAL and +1.

The only way to swap among these on the Nikon D300 and Nikon D3 is to save these preferred Picture Control settings in the Manage Picture Controls menu, and select one or the other through the menu system. It takes too many clicks for fast photography.

This is why I suggested Nikon add an easy, direct way to swap among these as Canon has done for the past few years. Most recent Canons allow you to program the central SET button to call up Canon's Picture Styles, which works great since you hit SET, spin the knob, and hit SET again.

Nikon listened, and the D90 and D700 are the first Nikons to allow fast changing between Picture Controls. You have to set them up as I outline in my D90 Users Guide and D700 User's Guide, which is to put Manage Picture Controls at the top of the My Menu menu, and program the FUNC button to call up the top item in My Menu. Now you tap one button at any time, click up or down to your Picture Control, hit OK, and you're there.

This is critical if you photograph different sorts of things from shot to shot, and an important reason to buy a D90 over a D300, and to buy the D700 over the D3. (Nikon's not stupid, which is why Nikon introduced the D300 and D3 first, so I bought both of them a year ago instead of the newer, smarter and less expensive D90 and D700 today).

Even before I had kids, I used Canon's ability to swap among these controls to select different contrast settings as scenes changed. Nikon is superior to Canon in that Nikons have adjusted themselves to different contrasts automatically for quite a few years, eliminating the need for this selection on previous Nikons that didn't offer much in the way of color settings.

Now that every day I'm photographing my kids and turning to shoot every other crazy thing that catches my eye, this fast-change ability is crucial.

Even with the D3 and D300, it's faster for me to select these in the menus than to jerk it around in raw. I never shoot raw, except once every six months to remind myself of what a pain it is, and how it looks the same or worse than JPG.

If I'm outdoors in direct sunlight light, I often also have to change exposure compensation between 0 in NEUTRAL, and to -0.7 in the contrastier VIVID and +3 saturation setting. Nikon's Matrix meter still isn't smart enough to read the effects of Picture Control settings, nor do the saved Picture Controls recall the compensation settings; that will have to wait for newer cameras.

Weirdnesses of Picture Controls

The image also depends on the basic setting, STANDARD, NEUTRAL, VIVID and MONOCHROME, from which you make your settings.

VIVID at its 0 saturation setting is far more saturated than STANDARD at its 0 saturation setting.

Set +3 (maximum) saturation in the STANDARD setting and it's nothing special. Set +3 saturation in the VIVID preset and it's wild.

Nikon should have done as Canon does, which is to let every setting have numeric values which always give the same results, and give us access to all the values in each menu. Nikon has chosen to keep this complex enough that people who don't read me will probably never figure it out.

How to Copy and Share Settings

Using MENU > Shooting Menu > Manage Picture Control > Load/save, you can store, recall and share these settings via CF cards.

I saved my wild setting using the SAVE option. I renamed it KenRockwell.com and put it on my web site (at <http://www.kenrockwell.com/nikon/d300/picture-control.htm>) for you to try.

Copy this PICCON01.NCP Nikon Picture Setting File to your computer. It's a tiny 52 Byte file that downloads instantly.

After you copy it, be sure it's named "PICCON01.NCP" Rename it if your computer renamed it something else. My Mac (OS 10.4.11) didn't recognize the file type and appended .txt to it, for instance. My wife's iMac (OS 10.5.1) worked fine.

Create a new folder called NIKON at the top level of your CF card.

Create a new folder called CUSTOMPC in this new NIKON folder.

Put the PICCON01.NCP file in the CUSTOMPC folder. Computer hackers would call this directory structure something like NIKON D300/NIKON/CUSTOMPC/PICCON01.NCP.

Nikon uses all capital letters, so I'd use the same.

Put the CF card in your camera.

Load it into your camera's memory using MENU > Shooting Menu > Manage Picture Control > Load/save > Copy to Camera.

You now can use the same exact setting I use in my D300 into your D300, big deal.

Shortcomings of Saving and Sharing Picture Controls

Now that Nikons can make wild colors just as Canon has done these past few years, it would be nice if Nikon had a way for direct access to various "picture styles." Since I have my colors cranked, I need to tone them down for people shots, which requires resorting to menus. On my Canons, I program the SET button to let me choose among my presets with the Canon big rear dial.

None of the Picture Control settings are complex enough to warrant saving them to a CF card. They are just a few simple parameters.

I find it easier to change them in-camera than to fiddle with jamming cards in and out of cameras.

These settings don't remember the critical settings for Active D-Lighting (ADL aka ADR), Nikon's great new dynamic-range management system. You need to set or unset these manually since they are not saved or recalled as picture styles.

From what I read in Nikon's D300 Users Manual (page 160 et seq.), Nikon only intends for these settings to be transferred on memory cards, not via computers or the Internet as I've done here.

Since the PICCON01.NCP files aren't file types recognized by computer operating systems, weird things can happen when transferring them. Sometimes punctuation in the preset names don't get recalled, your computer may rename the file, or the camera may not recognize the file after it's been through your computer.

I was able to recall my PICCON01.NCP file from the Internet and restore it in to my D300 via my Mac, but it took me a few tries on OS 10.4.11. It worked the first time on OS 10.5.1. Good luck!

Using the two-button reset

When you use reset, each Picture Control is reset back to its default, and each of your saved Picture Controls is reset back to the way in which it was saved.

If you changed anything about any picture control, like Contrast or Sharpening, and want to save that, save it as a new, named Picture Control.

B. D300 Autofocus Settings



Introduction

This section is specific to the Nikon D300. For other Nikon cameras, refer to my web site at <http://kenrockwell.com/nikon/af-settings.htm>.

External Controls

There are three controls, one on front and two on the back.

Focus Mode Switch (front)

The front Focus Mode Switch selects manual, or two kinds of autofocus.

M is manual focus, like the 1950s. S is “AF-Single,” in which position the camera focuses and then locks. C is “AF-Continuous,” meaning the camera constantly tracks focus as the subject moves in and out.

AF Sensor Selector (rear top)

On the back, the top AF Sensor Selector selects among the many AF sensors, if you want to.

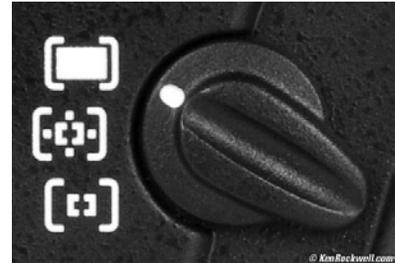
AF Sensor Mode Switch (rear bottom)

The lower rear switch is the AF Sensor Mode Switch. It chooses how the camera uses all, few or one, of the many AF sensors.

There are three positions. From top to bottom, I call them the Big White Rectangle, the Crosshair, and the Tit.

Each shows what AF sensors will be used.

The **Big White Rectangle** mode lets the camera choose the AF points itself by magic. That's why it's a big rectangle: the D300 uses whichever sensors it wants. It works great, but it can take the D300 a moment to pause to figure it out for each shot.



The middle **Crosshair** position lets you choose the sensor, and then the camera moves it around to track action as selected by you in CSM a3 (MENU > CUSTOM SETTING MENU > a Autofocus > a3). The graphic shows a single sensor, with lines showing that it can move as chosen next by the camera. The D300 can move it in any direction, not just the four ways shown in the icon.

The bottom **"Tit"** position selects only one fixed sensor at a time. The icon shows just one fixed sensor.

Nikon's Default

As shipped, move the front Focus Mode Selector to S, for AF-Single, point the camera at the subject, hold the shutter halfway, recompose, and shoot.

This is exactly the same way Nikon's N2020 worked — back in 1985.

The N2020 was marketed as "Dual Autofocus." That means it also had a continuous motion tracking mode. That's the C, as is Continuous, position of all Nikons today.

Move the switch to "C" to track moving subjects, however you're still stuck with the center sensor.

To get 23 years of improvements, you have to change the other settings.

AF-S always focuses and locks, and AF-C always keeps tracking the subject.

The AF Sensor Selector on the back has been the same since the F5 of 1996. Nikon calls this the "Multi Selector." Tapping the center gets you back to the center sensor. If you knock the "L - •" lever to "L," you'll lock yourself out of selecting the AF points, even though you can still navigate the menus.

My Favorite Settings

The D300 has so many AF sensors and has such intelligent logic that I often set my D300 to the “dummy” Big White Rectangle mode. In this mode, the D300 magically and automatically identifies the correct AF sensor (or sensors) and uses them.

I no longer have to pretend it's the 1990s and choose sensors manually, or pretend that it's the 1980s (or 1950s) and re-compose after focusing.

Even though the D300 has the same AF sensor and settings as the D3, the D300 lacks the D3's computing horsepower to interpret all this data as fast. The D300 doesn't always figure out which sensor to use fast enough, so if it's too slow for you in the Big White Rectangle mode, you may need to use the old-fashioned modes of picking AF sensors yourself.

Here's how I set my cameras. If I don't mention a setting, I leave it at default or it's not related to focus.

Front Focus Mode Switch

C, for AF-C, continuous tracking AF.

Custom Setting Menu a1 (AF-C Priority selection)

I set “Release + Focus.”

In the default of “Release priority,” the camera just shoots, whether or not you're in focus. I never get any other than the first shot or two of a series in focus at this setting. It's a silly setting which makes the camera work fast in the store, but sucks for moving subjects.

In “Focus priority,” the camera waits until each and every shot is in perfect focus. This slows it down — a lot. This is the default for the AF-Single setting for still subjects, but a bad idea for moving subjects.

“Release + Focus” is an in-between setting. In this position, most of my sequence shots are in focus. I hit the shutter, and my D300 shoots as soon as it figures out which sensors to use in the Big White Rectangle mode, or immediately in the other sensor modes (Crosshair or Tit).

Set this way, the D300 usually just shoots. If you're way out-of-focus you'll get a fuzzy first shot, but you won't miss it and the D300 will be in focus for the next shot as fast as it can.

Rear AF Sensor Mode Switch

I usually set it to the top setting, the Big White Rectangle. This means D300 magically picks the right sensors itself.

The D300 doesn't always choose the right sensor, and it isn't always that fast (like the D3), so for many uses, I'll use the Crosshair or Tit setting to pick a sensor myself.

When I chose the sensor, it speeds up the D300 since the D300 doesn't need to sort sensors itself. This is one of the biggest differences between the D3 and D300: the D3 automatically chooses sensors, and chooses the right ones, instantly in Big White Rectangle mode.

I can flick the AF Sensor Mode Switch without taking my eye from the finder, and I do whenever I need to.

By setting the **Custom Setting Menu a3 (Dynamic AF Area) to 51 Points (3D Tracking)** in AF-C and the Crosshair mode, your manually-chosen AF point will magically move all around the frame tracking your subject! You'll see it move all around, and it really works. This only works in the Crosshair and AF-C mode; it doesn't move around in the Big White Rectangle, Tit or AF-S modes.

This tracking mode gives us another way to shoot if you don't want to select a single AF sensor near your subject. If you prefer, you can autofocus with the center sensor, and in this 51-point 3D tracking mode, keep your finger on the shutter and the AF area will move all by itself, tracking the subject as you recompose!

More Settings

The settings above let me just shoot. They work for sports and for still subjects. I just grab the camera and shoot. In AF-C and White Rectangle Modes, no AF sensors light up. You just shoot.

Stills

If I'm shooting still subjects, I'll choose the AF-S (single) mode on front. Now, in Big White Rectangle Mode, the selected sensors light up, and the focus locks as long as I hold the shutter halfway. If the camera's not magically selecting the sensors I want, I'll select them myself in the lowest "dot" (single-sensor) mode of the Rear AF Mode Selector.

I usually shoot the D300 in the Crosshair or single-sensor mode since the D300 isn't as fast to select sensors automatically.

You're in luck if many sensors light in AF-S and Big White Rectangle modes. This means the camera knows all these areas are in perfect focus.

Sports

For sports with a lot of people running around, use AF-C, the 3D menu option (CSM a3), and the Crosshair mode on the AF Sensor Mode Switch. Now tell the camera which player is yours, and it will track them all over the frame.

Summary

I set the front Focus Mode Switch of my D300 to AF-S for still subjects, and AF-C for moving subjects.

My D300 isn't always fast enough to figure things out with the rear AF Sensor Mode Switch in the Big White Rectangle position. Therefore I usually run my D300 in the middle (Crosshair) position of the AF Sensor Mode Switch.

If I am in the Big White Rectangle mode and the D300 needs help finding the correct AF sensor, without moving my eye, I flick the AF Sensor Mode Switch to the Crosshair setting, which lets me choose the AF sensor and the D300 then tracks the subject. By tracking the subject, the D300 is so smart that it tracks the subject if the subject moves, or if I change my framing.

Acknowledgment

Many thanks to Lindsay Silverman of Nikon, who took my D3 aside and said "Watch this" as he taught me how to use CSM a3, 3D tracking. I doubt I ever would have found these on my own.

C. Modern Exposure

Introduction

Photographic technique is a continuous process of shooting, analysis, and then applying that new knowledge to the next shot.

I've been doing this for 40 years, and learn new tricks all the time because I'm paying attention.

For the first 15 years I was an idiot. I thought the way to get better pictures was with a better camera. I thought the camera was responsible for metering and making the correct exposure. I was too inexperienced to realize that, like driving a car, you always have to apply intelligent corrections to get perfect exposure, just as even the best cars need a driver to keep them in-lane.

Exposure and keeping a car on-course are the same: you have to keep your eyes open and turn the wheel (or the lighten/darken control) to keep the car (or exposure) where you need it. The best ones need less correction, but they all need help some of the time.

Only an idiot like me lets the car or camera drive itself. Look out the window (or at the LCD) and make course (or exposure and color) corrections as needed.

Today I shoot all my cameras on full automatic (matrix/evaluative metering, program exposure, and Auto ISO) and alter the lighten/darken (exposure compensation) control if needed.

No longer does anyone need to worry about ISOs, apertures or shutter speeds; most cameras do this automatically. All you need to know is when to apply a little bit of correction to the camera's decisions, and you do this by looking at your LCD.

Modern exposure technique is all about optimizing the exposure compensation as needed, not setting exposure manually. The manual part is making the slight corrections to the automatic exposure, not setting apertures or shutter speeds as in the 1950s.

Film

In film days, I'd shoot and take notes. I'd look at my film, see what was good and bad, and apply changes the next time to do more of what's good and change what was bad. Ditto for color: I'd try different filters in different light, and use what looked best next time.

By repeating this process over the decades I got the colors you see in my gallery at <http://www.kenrockwell.com/gallery.htm>.

Pros used Polaroid backs to let them see what they were doing without having to go to a lab.

Most film cameras and meters were off by as much as a full stop, so we simply applied corrections to them. The world has always been this way.

My Nikon L35AF was 1/3 stop off, so I shot ISO 50 Velvia at a setting of EI 64 and everything was perfect. My Minolta X-700 was off 2/3 of a stop, so I shot Velvia 50 at EI 80 and got great results.

My Nikon SLRs were always dead-on.

Digital

Digital makes this much, much simpler.

Instead of waiting for film developing and looking at written notes and trying to correlate them to film frames, you just look at the LCD. Duh!

Even easier, every digital camera has a lighten/darken control, usually a button marked +/-, and cryptically called "exposure compensation." You tweak it to fix the next picture. Easy!

This is easy:

1. Take a picture.
2. Look at the LCD.
3. OK? If yes, you're done. If not:
4. Adjust +/- control to lighten or darken, and repeat from step 1 until perfect. Some cameras may hide the +/- control in a menu; on Canon compacts, press FUNC and click down one.

Experience

With experience you'll learn under what conditions, to apply what compensation, and save yourself some of the steps to get there.

In film days we had to test and know from experience what conditions required what compensation. Applying this experience let us get great shots every time. Less experienced photographers had to rely on guessing, called bracketing.

This same experience with your digital camera will help you get the right look with fewer tries each time. Any idiot can do today what took me years of running back and forth to the lab.

Today only a super-idiot allows himself to get a bad exposure and blame it on a digital camera. These are the same kind of people George Carlin called the "Stupidest People on Earth": people who run out of gas in a car with a perfectly good gas gauge. A camera's gas gauge is the LCD. Use it.

Better and Worse Cameras

The actual amount of compensation needed or used is irrelevant.

What is important is how consistently you can use the same setting over a broad range of conditions.

Getting great results with a camera to -2/3 all the time is much better than a camera which usually needs no compensation, but just as often needs to be changed. This jacking around wastes time, which makes you miss shots.

Auto Exposure

In the old days (1950s) we had to read a meter and set manual apertures and shutter speeds by hand. We chose film for the light conditions, and were stuck with that ISO for the whole roll.

Modern cameras have the metering and apertures and shutter speeds automated, saving us the manual jacking around. I used to be so stupid, even as recently as 20 years ago, to think that blindly following a meter and setting these manually on my F2AS gave better results than electronic automated cameras. Wrong: the automation does the same thing I was doing, just faster and better.

The only lenses on which I make manual settings are those which have no automation, which are my large-format film lenses.

Auto ISO

In the early days of digital SLR cameras (before 2004) we had to set ISO manually. We thought it was cool that we could change the ISO with a button instead of having to change a roll of film.

Modern DSLR cameras (Nikons since 2004) can set the ISO for us as well as they set our exposure. This lets me spend more time finding cool things to photograph and waste less time as a potential crime victim stopped and dickering with ISO settings.

Auto ISO, like automated exposure, is the way we shoot today. Screwing with manual ISO adjustments is as pointless as I was 20 years ago jacking around with manual shutter settings on my Nikons.

All or most compact digital cameras have had auto ISO settings as defaults for years.

Nikon DSLRs have had this since the D70 of February, 2004. Today they all have programmable Auto ISO. I always use this.

Auto ISO is deactivated by default in most SLR cameras, except in the green and dummy modes. I always find Auto ISO and turn it on.

The Nikon DSLRs even let you program the Auto ISO to exactly how you would like them to work as the light changes.

On my Nikons, you go to MENU > Custom Setting Menu (pencil) > ISO Auto and turn it on. You tell it the lowest shutter speed at which you can get a sharp shot (default is 1/30).

In Auto ISO, the camera cranks up the ISO as it gets darker from the speed you set. In other words, if you're set to ISO 200 and it gets dark enough to need 1/15 of a second, the camera magically will set ISO 400 and 1/30 of a second. In the old days I had to tweak the ISO as the subject or light changed. After the ISO hits the top ISO as it gets darker, usually ISO 1,600, only then does the camera use slower speeds than what you selected in the Auto ISO menu.

Newer Nikons, like the D200 and D80, even let you select the maximum ISO you wish to permit. By default, this is ISO 1,600. If you'd rather the Auto ISO function stop at a lower ISO, tell the camera so in the same menu.

Auto ISO starts at the ISO you have set on-camera, and goes up to the maximum you've allowed in the menu (ISO 1600 on D70) as it gets darker.

Auto ISO will also drop the ISO if you have the camera set to a high ISO and it gets too bright for conditions

One defect still in the Nikons is that once set, they stay on Auto ISO, even if you revert to manual exposure mode. This drives me crazy, since the camera starts jerking around the ISO to do what the meter says, even though the reason you went to manual was to lock in one exposure. Nikons should give us an additional menu option to defeat Auto ISO in manual mode, which would save us steps disabling Auto ISO when we go to manual exposure mode.

One of the biggest reasons I prefer my Nikon DSLRs to Canon is because Canon is still back in the 1970s: they have NO Auto ISO in their DSLRs, except in the dummy modes. This gives me lower image quality, because I either have to leave the camera on a higher ISO to cover all conditions, including daylight, or leave it set lower and get more blurring if I point the camera into a dark hole, unless I want to stop and be a crime target twiddling with a manual setting. Having no modern Auto ISO gets in the way of making pictures, just like having to pop a hood on a 1960s car and jerk around with a stuck choke just to start the car.

The Future of Auto ISO

No longer do we set ISOs manually. What we do set is the lowest permissible shutter speed for conditions. That shutter speed is usually dictated by the subject, and usually the

lens. I set 1/8 with my Nikon 18-200mm VR, and a higher speed if I'm shooting at the longer end of the range.

Nikon and Canon: please include me on your patent applications for this. I don't expect a cut, and would like to be named.

In the future, hopefully 2007, we'll be able to set the Auto ISO functions to change the lowest shutter speed automatically to track a factor of the focal length of the lens. As we zoom to longer focal lengths, the Auto ISO function will be smart enough to increase the minimum shutter speed below which it increases the ISO.

D. How to Get Great Colors



Sunset, Las Vegas, 04 October, 2006.

Introduction

I snapped this from a parking garage on my way out for something else. It's exactly as the JPG came from my D80. Here's the original 2.3MB file.

People see my work and wonder how I get such saturated colors. Here's how.

Most people never see colors like this because they live indoors, work in an office, drive to and from work, and live in a house. These colors happen outdoors in nature. The peak color, which are the shots I show, only exists for 60 seconds at most, if it happens at all, any given day. I'll make series of images, and only one of them is at peak color.

I take a long time to find colorful things at which to point my camera. This takes an artist's eye and a Saint's patience. No amount of equipment or playing in Photoshop can duplicate it. It takes me a long time to find things that look wild.

Spend as much time as I do out there hoping for great conditions and you too will see the wild colors that less experienced (or more sane) people have never seen in nature. That's how I get my photos: patience, not technology. I was getting these crazy colors long before Photoshop was invented.

Photography is the power of observation, not the application of technology.

Curiosity, Patience and Fortitude

I spend a lot of time and effort searching out times and places where colors explode. It takes a lot of patience and planning to wait for nature to do her thing. Like a nectar-crazed insect, I spend my photographic efforts looking for wild colors in nature.

Color is my subject. I'm not a nature or portrait or landscape or sports or architectural photographer. I'm a photographer of color. I don't care about the apparent subject so long as it's in glorious light or is vividly colorful. Why do I photograph toilets as often as trees? Simple: if they are vivid and have an interesting play of color, they're my subject.

Most people have never experienced the colors I photograph. This is why they think something's fake. Other photographers get the same feedback, which is why Galen Rowell's gallery has a light table with original transparencies as examples. Galen was also doing this long before Thomas Knoll wrote Photoshop.

Glorious light only happens for 60 seconds or less any particular day, if it happens at all. If it happens at all, it usually happens sometime in a window 15 minutes before or after sunrise or sunset. See actual examples at my web page on The Importance of Timing at <http://www.kenrockwell.com/tech/timing.htm>.

Glorious light doesn't happen in the day. It happens at sunrise and sunset. We call this "magic hour" in Hollywood.

Most people sleep through sunrise. They lose half their potential shots. I have to get up at 3 AM, get out at 3:30 AM, get to the location at 4:30 AM, set up by 5 AM and wait for a 6 AM calculated sunrise. I'm crazy. Are you?

Sunset is as tough. Most people are eating dinner while I'm out shooting. I have to jerk around my schedule, as well as the schedule of normal people with whom I travel, to be out at sunset. Photographers have dinner at 4 PM so they can be shooting at 6 PM.

Even photographers fake themselves out. A bunch of us were photographing at sunset, and I thought something interesting might happen. The rest of my photography group took off for dinner while I stayed around in the dark. I got this shot, one of my all time favorites, while they were having dinner.



If you sleep at sunrise and eat at sunset you'll miss the only light that shows things the way I, and many others, like to see them. That's why most people have never seen colors I show and think I'm making all this up in Photoshop. If I could get these results artificially I would, however one still has to trudge out and get this from nature the hard way.

Perseverance

These colors don't happen every day. They may happen once a month, once a decade, or once in a lifetime. This shot (see next page) got the orange color in the sky 20 minutes after the sun set because of ash in the upper atmosphere from the eruption of Mt. Pinatubo in 1991.



This colorful natural disaster has not repeated itself. Galen Rowell was unhappy with colors at sunset after the eruption, however the colors were pushed back until 15 minutes after sunset each day.

9 times out of 10 the sunrise is dull and a complete waste of time. While everyone else is eating dinner I'm out setting up hoping for great light at sunset, and again usually I get nothing. That's why this takes patience.

You can't predict nature, even 5 minutes before. I can try, but I never know what's going to happen. I have to be out there and set up every time. Sometimes what I expect to be dull turns out to be explosive, and sometimes what I expect to be incredible never happens. Nature changes minute to minute.

You can't expect God to create miraculous color any particular day just because you took that day off for vacation in Yosemite. You need to be out every single day.

You don't need to be in Yosemite: most of my shots are from my own neighborhood. It's all about the light and color, not the subject. Ansel just happened to live in Yosemite and waited for clearing storms. It's not Yosemite; it's that he was there every day.

Michael Fatali calls this "waiting for the light," which he lists for each of his shots. Sometimes he has to wait for months for the right light. Click on his images in his portfolios and then select "Field Notes."

Predicting sunrise and sunset times is easy. Almost any \$75 GPS will do it for you anywhere on Earth. Many websites, like the US Naval Observatory, can give you the same data presuming you tell it where you're going to be. These devices predict sunrise and sunset at a virtual horizon, ignoring any mountains or buildings.

Night

An easy way to get wild colors is to photograph at night.

Our eyes are much less sensitive to color at night. Digital cameras and film retain the same sensitivity. Therefore photos made at night have much vivid colors than what we see under the same conditions. This makes it easy to get wild colors.

Photograph before the sky turns completely dark, typically a half hour after sunset, to get a sky instead of a black hole. Skies at night turn funny colors from whatever street lights are miles away. Make your shots while there is still light in the sky for better results.

Photograph any neon or artificial lighting. Artificial lighting, either as an object in your photo or as a source of illumination, adds wild colors. Every kind of light, mercury, sodium, fluorescent, tungsten, renders as a different weird color in photographs. I use this to my advantage.

Here's a cheat sheet:

Sodium: looks yellow or orange to us. Looks gold or orange or yellow in photos.

Tungsten: Looks white to us, looks orange in photos unless you select Tungsten film, an 80A filter or tungsten White Balance.

Mercury: Looks bluish-white to us. Looks green in photos.

Fluorescent: Looks white to us. Looks greenish in photos.

Day into Night

There is a sweet spot of only a minute or so when the sky and land have just the right balance as day fades into night. With practice you'll learn when conditions are the most spectacular.

As an assignment, set up your camera and make shots of a landscape every minute during and after sunset. You'll be astounded at how things change from minute to minute, and how some of these images are so much stronger than others in the same sequence. You won't see this while you're shooting, which is why it's so important to do this exercise. It becomes obvious when you play back the photos.

Photograph a landscape from sunset (or before) until it's completely black, which is about an hour after sunset. Also try this photographing an actual sunset. Sunsets vary from second to second. Pay rapt attention!

Doing this has shown me that as the sun rises I make photos before the sun comes up, but I never like the results compared to when the sun has risen above the horizon.

Schedule

0 dark 30 (predawn)

Typically I have to get up well before dawn. This gives me enough time to get to wherever I need to be at dawn. I'm showered and fed from last night.

Dawn

Shoot.

8AM

Have breakfast on my return at a reasonable hour. Shower for the day. If I'm tired from being up since 3 AM I'll nap.

Day

Scout new locations, goof off.

Afternoon

Have lunch and/or dinner.

Sunset

Shoot.

After dark

Later dinner.

After dinner

Shower and get to sleep early. This way I can arise well before dawn tomorrow, all showered and fed.

Technique

Technique is the easy part. 90% of my work is being at the right place at the right time. If you're there, then technique is easy: just make the picture. Since I'm there I make a lot of pictures and pick the best later. You never know if the light is going to get better, or if haze is going to roll in and kill the party.

If you missed the sunrise by 5 minutes then no amount of photoshop jerking around will replace the shot from the other guy who woke up on time.

Shooting – Digital Cameras

I set my digital camera's saturation to whatever looks right, usually "plus" on SLR cameras like my D200 and D70. I set my Canon point-and-shoots (like my A70) to "Vivid." My Casios are saturated already, so I leave them at "0."

Exposure is tough with digital cameras. The slightest overexposure destroys saturation.

The best way to determine correct exposure is to look at the color image on the LCD. Ignore any single-channel histograms. Be sure your bright reds are red, and have not started to blow out towards yellow, orange or pink. If you need a lighter image, lighten it later in Photoshop. If you lose your highlights you can never get them back.

It's fine to underexpose and lighten later.

It's futile to attempt recovery of an overexposed color image. There is no highlight latitude in digital. If you blow it (hee hee) you'll have to revert to painting color back into the highlights the hard way! Photoshop's Image > Adjustments > Shadow/Highlight is the most practical way to attempt recovery of blown highlights, but it's not going to restore lost color.

Histograms are useless unless they include separate red, green and blue curves. Single-channel (curve) histograms, like those in the Nikon D50, D70s and Canon 20D, are worse than useless because they will indicate correct exposure while saturated colors are overexposed!

Saturation, by definition, is when the three RGB channels have different values. The greater the saturation, the greater the differences. Single channel histograms usually only show the green channel (not the sum), so they ignore the red and blue! I love saturated reds and yellows, and the histograms in the D1X and D70 and D100 are completely blind to any saturation in the red channel! Your histogram may say everything is fine while your red is completely blown out. Blowing out the red channel both desaturates and shifts the color! With these cameras look at the image itself on the playback LCD.

The newest cameras, like the Nikon D200, Canon 30D and all my Casios have four-color histograms. I use these histograms. Be sure none of the graphs for any of the colors run off the right-hand side of the graph. See my page on RGB Histograms at <http://www.kenrockwell.com/tech/yrgb.htm>. When you use these, you'll see one or another channel has much greater values than the others. Don't worry that some of the channels appear much lower. That's good and means you have saturation!

Shooting – Film

I prefer the look of Fuji's Velvia 50 professional slide film over every other film, including the new Velvia 100s. Choose a film that sees things the way you want to see them. If you want bold hit-you-in-the-head color, then use Velvia as I do.

Almost everything you see on this site was photographed with Velvia 50, without filters and without playing in Photoshop. I get similar results in digital; however you folks ask for articles like this which keeps me too busy to keep my Gallery up to date. As of 2006 I shoot both film and digital.

Printing

I scan my film. I print digital and film images the same way.

I use the glossiest paper I can get. Glossy prints retain vivid color. Matte prints lose it. I prefer Fuji paper over Kodak, and prefer Fuji Super Gloss polyester-base paper to the usual Fuji paper. Super Gloss only comes from professional places, you won't get it unless you look. Super Gloss' base has a pearlescent 3-D look. You can see depth, just like a pearl! Super Gloss always looks like it's still wet.

I send everything up to 12 x 18" to Costco to print on regular Fuji glossy paper, and bigger prints in Super Gloss to Calypso.

Inkjets went obsolete in 2003. Current HP, Epson and Canon inkjets are bad because the gloss of their prints varies from light to dark! Look at an inkjet print at an angle to see the gloss and you'll see it vary all over the image. There is expensive polyester based film for inkjet printers which can look good, but costs 4 times what a real print does. See my pages on printing at <http://www.kenrockwell.com/tech/printers.htm>.

A transparency, slide or computer screen glows with color and can be more vivid than a reflective print.

Artists make their tools do whatever they need to to create the final image. An artist directs his or her efforts to create based on what's available. Casual photographers have the misimpression that they are at the mercy of whatever tools they have. Snapshooters don't realize that it's up to them to take charge and make the tools do what they want, not the other way around.

You can't get these colors from print film unless you make your own prints. If you have a lab make your prints the colors are usually interpreted incorrectly. Prints from negative film usually come out the wrong colors unless you print them yourself.

Summary

Being there is 90% of getting great color. If you don't see great colors when you make a shot, no amount of photoshop is going to fix it. Cranking saturation or contrast in Photoshop makes an image more vivid, but won't make a so-so image sing. You have to go out and seek color. You can't make it, unless you're a painter.