



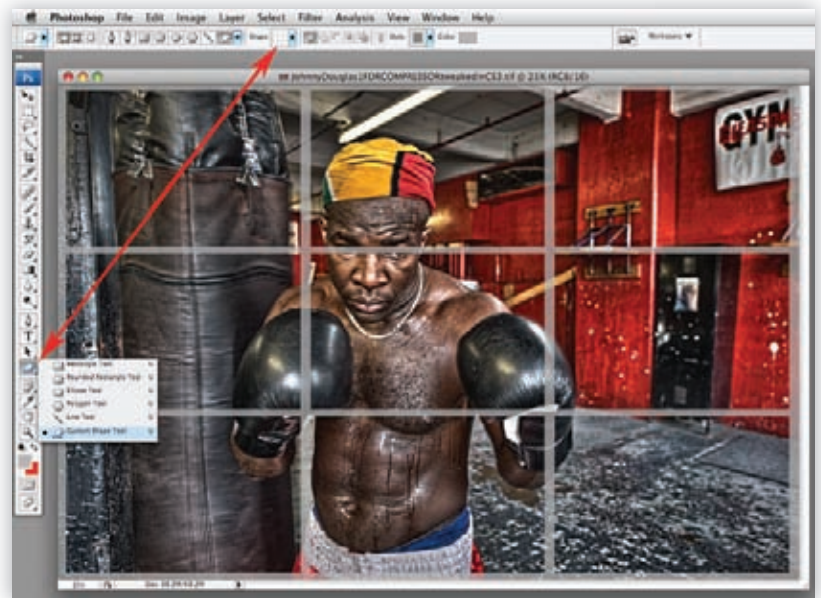
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Composition, Framing, and Exposure Basics

The basic rules for successful photographic composition hold true for High Dynamic Range Imaging just as they do for traditional single-shot photography. Don't think that the HDR process will miraculously turn a boring, ill-composed scene into a masterpiece simply by capturing multiple frames and tweaking it with the HDR workflow. In fact, because High Dynamic Range Imaging can hold detail information across a much wider exposure value range than traditional imaging, composition and framing are more important than ever. In this chapter, we're going to explore some basic photographic composition tips, and focus on maximizing the strengths of the various lenses.

2.1 The Rule of Thirds

There's a rule out there that it is not possible to publish a photography technique book without at least a passing mention of the rule of thirds. The simple reason for this is because *this* rule generally works. Take a look at many of your favorite photographs—whether your own compositions or any photos that really speak to you. Odds are, the greater percentage of the images will be able to be described as falling under the sway of the rule of thirds. If you overlay these images with a tic-tac-toe grid, the primary point(s) of focus will fall on or very near the intersections of the vertical and horizontal



dividers. In fact, many cameras with Live View LCDs have built-in rule of thirds grids for compositional assistance.

There's a pleasing balance to the asymmetry of many images that follow the rule of thirds. Certain schools of thought hold that the rule of thirds strikes the eye and mind as aesthetically satisfying in an innate way that predates words and superconscious philosophizing—but I'm not going to go too far down that rabbit hole.

When possible, try to frame images that subscribe to the rule of thirds. Don't get super-obsessive about completely nailing the primary eye point dead on the intersections; in

▲ It's easy to check for rule of thirds compositions in Adobe Photoshop CS3. Select the Custom Shape Tool, and pick the grid box from the dropdown menu. I made a new layer and dropped opacity down to 75% for transparency. In this example, both of the boxer's gloves intersect rule of thirds points, and his eyes are both on a line, just a touch off from another intersection.

RULE OF THIRDS The rule of thirds is a compositional rule of thumb in photography and other visual arts. The rule states that an image can be divided into three equal parts vertically and three equal parts horizontally, thus creating nine sections (like a tick-tack-toe grid). The four points formed by the intersecting lines can be used to align features in the photograph. The theory is that if you place points of interest at the intersections or along the lines, your photo becomes more balanced and more aesthetically pleasing. ■

► Foreground, middle ground, and background elements make for a layered image with more viewer engagement. Here there are pilings and hints of boats framing the foreground, a bridge spanning the middle ground, and the Manhattan skyline as the background.



the closely surrounding neighborhood is fine. Outside of photo how-to books and art classes, you don't often see people running around with rulers and overlay grids assessing the exact placement to the micrometer of the focus points of the artwork before them!

All that being said about the rule of thirds, there are times when a centered composition—particularly with close portraits—offers more engagement and stronger impact. One of the best photographic rules to remember is to know the rules, and know when to disregard them. This only comes with practice, experimentation, and heaps of trial and error.

2.2 Lines, Layers, and Textures

Leading lines can be used to define divisions of space and to draw the viewer's eye into the

image. A roadway or footpath toward the bottom edge of the frame suggests a breakdown from being a passive viewer to an active participant in the image. Conversely, the span of a bridge leading out of the sides of the frame suggests height and distance. The world is your canvas, and strong leading lines can be utilized to draw the viewer's attention to your chosen point of focus.

Look for layers of intrigue—different planes of interest add to the dimensional experience of viewing a photograph. Maybe it's a foreground rock formation, a creek, and distant hills; or—as with the figure above—dock pilings, a bridge spanning the river, and the skyline across the way.

Indoors, look for a foreground element that is a key to the visual story. Is it a steaming teacup on the edge of table in an ornate room? Is it a tease of just a few lines of a handwritten



This shot shows both types of aerial perspective. It's shot from a moving blimp, and shows the atmospheric/aerial perspective effect of the distant objects turning blue and gray and hazy. HDR photography can sometimes overcome the atmospheric effects.

letter and a telling scene behind? Don't be afraid to think creatively. Look at everything with a photographic eye and think how you can tell a story with what you see in front of you.

Search for different textures and different colors to define contrast in High Dynamic Range Imaging. This is important, because in many HDR images, two major types of contrast perception play a diminished role. First is the role of light and shadow as perception clues, and the second is atmospheric perspective. Our eyes have a greater dynamic range

than a single Low Dynamic Range photograph, but we have become so familiar with the visual language of LDR photographs that it throws us a slight curveball.

Atmospheric perspective (aka aerial perspective) is a visual clue of distance and scale both with our eyes when actually observing a scene before us, as well as in photographs. In single-shot LDR images, atmospheric perspective may be exaggerated due the limits of the medium. Conversely it may be managed with split density filters;

although not to the dramatic extremes possible with HDRI.

But, always look to build contrast by pairing varied textures—both manmade and natural—with strong color variances to build contrast elements within your High Dynamic Range images.

2.3 The Three Intertwined Exposure-Setting Functions of your DSLR

Aperture and Depth of Field

As a general rule, the wider and faster the aperture, the more shallow the depth of field will be. Depth of field indicates the distance in front of and behind the focal distance that will appear acceptably sharp in the captured image. Focal length, distance to subject and hyperfocal distance also play a role in depth of field, and you'll have to experiment with your personal lenses to determine exactly how deep or shallow focus is at a given aperture and at given focal distances. As you stop down to smaller f/stops in full increments (aperture numbers get higher: f/5.6 is a full stop slower and smaller than f/4), depth of field will increase, and your shutter speed must be halved to make an equivalent exposure. 1/100 second at f/4 at a given ISO is equal to 1/50 second at f/5.6 in terms of light gathering for equal exposures. Pinpoint focus with a wide aperture, as well as expansive foreground to background sharpness when stopped down to small apertures, can both be employed effectively for High Dynamic Range Imaging. However, as a change in aperture does alter the focal depth and relative sharpness, it is not recommended to alter aperture/depth of field during capture of a High Dynamic Range source

image bracket sequence. Change shutter speed instead—which will affect the exposures without changing the focus.

ISO Sensor Sensitivities and Sensibilities

Digital camera sensors actually possess only one native ISO speed rating. Every other ISO on a digital camera is an interpretation of that capture data based on complex algorithms and signal boosts. And as ISO numbers increase, the signal-to-noise ratio diminishes, leading to two issues at higher ISO: significant increases in noise, which may or may not be coupled with aggressive blur filtering to minimize noise—which can sap resolution and fine detail from your higher-ISO cameras. The good news is that noise management is getting better with every product cycle—meaning higher ISO images are becoming cleaner without significant detail loss, which is a very good thing for a number of reasons.

However, it is not advisable to switch ISOs to alter exposure during HDR capture as the pixel and noise patterns can change significantly from one ISO to the next, and this may present image-degrading artifacting and ugly blotchy noise in your tone-mapped images. It is a good idea to always use the lowest ISO speed you can get away with to achieve exposures that will work with your aperture and shutter speed choices.

Shutter Speed: How to Change Exposure with the Least Impact for Your HDRs

The third camera setting that can be tweaked to alter exposure is shutter speed. This is the preferred method for capturing the same scene

at different exposure values for High Dynamic Range Imaging, because it generally and usually has the least impact in significantly altering the framing and composition both at the macro (aperture: depth of field) and micro (ISO selection: noise and pixel/grain patterns) levels. Of course, this rule holds most true for completely static scenes with zero moving or potentially moving elements. It tends to fall apart when the scene contains moving elements, such as water features, pedestrians, vehicles, active wildlife, and such. This is the big reason why High Dynamic Range Imaging is easiest with completely static compositions.

Here's the big thing about High Dynamic Range Imaging: you are not simply picking a single shutter speed. You are selecting a range of shutter speeds based on the particulars of the scene. We call this a bracketed exposure sequence, and it is at the heart of High Dynamic Range Imaging with your DSLR. And with compositions with extreme variations in exposure values, the range of bracketed shutter speeds may span action-freezing thousandths of a second to motion-blurring long seconds. Again, this is why scenes with *zero* moving elements are the easiest to capture HDR-style.

That's all a bit confusing, isn't it? Why not just leave it in full auto and hope for the best?

In some ways, yes, it is easiest to leave your camera in Auto *everything* and just set your Automatic Exposure Bracketing (AEB) setting to maximum spacing and hope for the best,

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IN-CAMERA HDR? A quick look around the message boards and blogs about High Dynamic Range Imaging will reveal that there are quite a number of misconceptions about in-camera dynamic range optimization. Yes, two-thirds of the words from HDR are in this in-camera tweak (“dynamic” and “range”), but any way you slice it; it is not HDRI.

You see, every photon capture device has a dynamic range—from the cheapest webcam and cell phone, all the way up to pro-level DSLRs. And no currently available commercial still camera can truly capture a High Dynamic Range image in a single capture. Even the best DSLRs cap out at about 10 EVs in a single RAW frame—not enough for true HDR imaging.

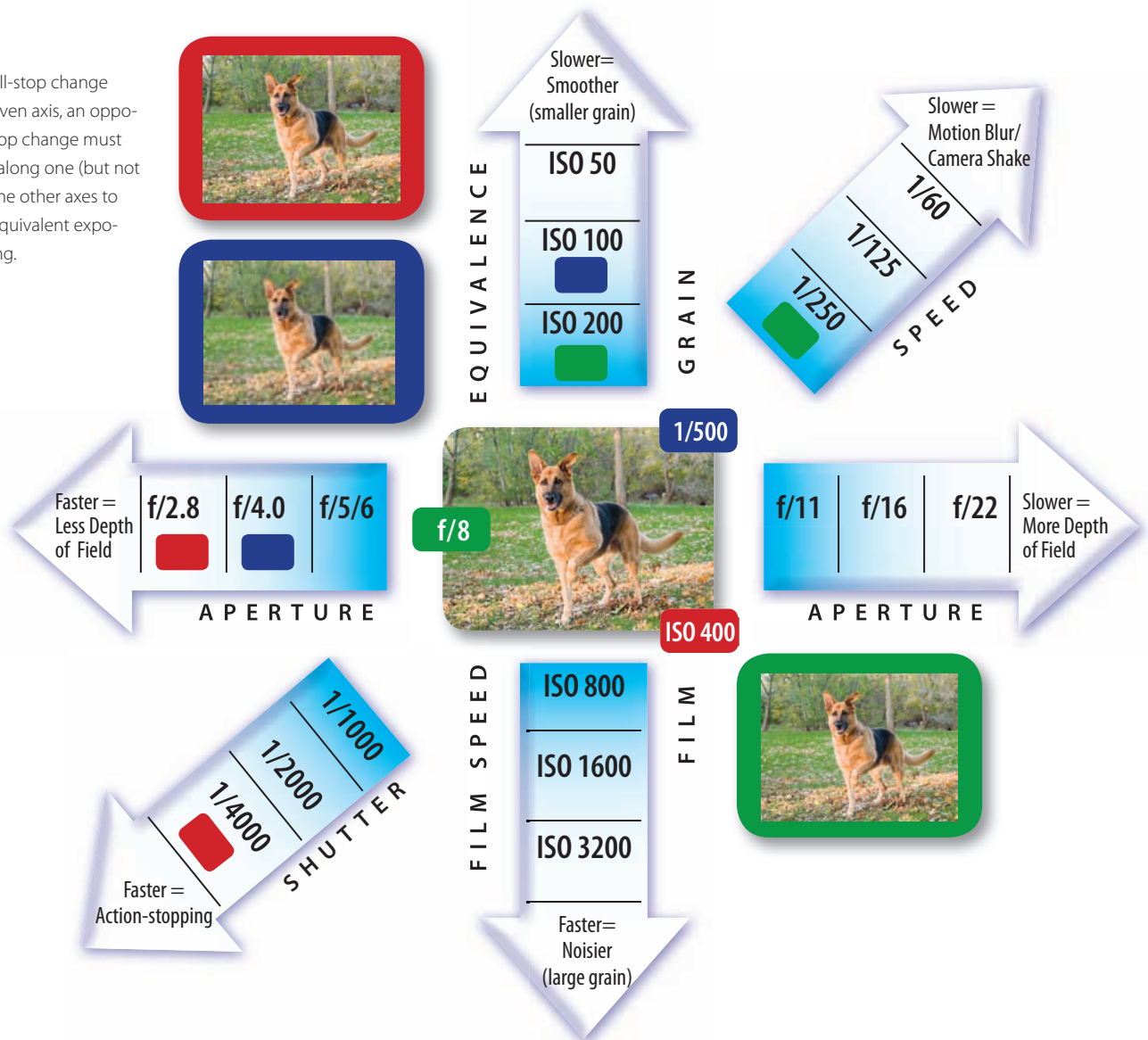
For many scenes and situations, 10 EVs may be more than sufficient, but there will still be a lot of tones that fall into the deep, dark, noisy shadow lands. I'm going to try not to geek out too much here, but there are certain tricks involving big scary math that can tweak that linear capture data to pull up shadow detail and burn in highlight detail during in-camera processing, or in post-production. But it's still not HDR.

It doesn't matter if you call it D-lighting, Dynamic Range Optimization, Highlight Priority mode, or what—it's this year's hot trend, and everyone's got their own name for it. In many cases, it can help to maintain some nuanced detail in delicate highlights and shadows. But it does come with a price. Go back and look at your camera manual. Search for that footnote that states something like: “This mode may visibly increase noise, particularly in shadow areas.” You see, it is simply cooking the linear data with a specialized curve to push the linear data away from the toe and shoulder of the curve and towards the middle range. This certainly has its uses in many applications, and for many a situation this may be all that is needed. But it does not truly, significantly increase the dynamic range of the image in the same way that a bracketed sequence of images merged into a single HDR image does. ■

but where's the fun in that? DSLRs are creative tools, and these creative tools are best used when the eye behind the lens takes as much control of the image-making as possible.

The first step to move from simply “taking pictures” to consciously “making pictures” is to understand and control the way light reaches the sensor; and the triad of aperture, ISO, and shutter speed interdependencies. Changing any one of these three a full stop in one direction requires an equal reaction of one of the other two in the opposite direction.

► For any full-stop change along a given axis, an opposite full-stop change must be made along one (but not both) of the other axes to keep an equivalent exposure setting.



If you double your shutter speed, from say, 1/500 to 1/1000, you must either halve your ISO, from say 800 to 400, or open up your lens a full stop, from f/5.6 to f/4, for example. *But* if you both open your aperture a full stop and halve your ISO, you'd have to double your shutter speed once again: from 1/500 to 1/2000—two full stops, one for the aperture adjustment and one for the ISO adjustment. *Got it?*

Yes, it is very confusing that each of these three systems employs a different counting

system, isn't it? There are reasons and logic behind each scale; but honestly, it's easier to simply memorize each scale in full stops, half stops, and third stops and remember to adjust accordingly rather than puzzle over why f/stops are described on a scale based on the square root of two, ISOs double or halve, and shutter speeds represent actual time measurements. Would a nifty graphic help to hammer all this info home? I sure hope so!

2.4 Relative and Absolute Exposure Values

If you've grasped the information on the intertwined relationship between shutter speed, aperture, and ISO, you've got the concept of exposure values down—kind of.

Switching a shutter speed one full stop is a change of one EV. Boosting ISO one full stop is a change of one EV. Stopping a lens down a full stop is a change of one EV. It seems easy enough, doesn't it?

Here are some examples on the absolute scale:

- EV 0 is equal to 1 second at $f/1.0$ at ISO 100
- EV 1 is equal to both 1 second at $f/1.4$ and $\frac{1}{2}$ second at $f/1.0$
- EV 2 equals 1 second at $f/2$, $\frac{1}{2}$ second at $f/1.4$, or $\frac{1}{4}$ second at $f/1.0$
- EV 16 is equal to $\frac{1}{1000}$ second at $f/8$ (as one possible combination. You should be able to determine several more.)

And so on, and so on. Yes, it is really simple and elementary in some ways, but massively confusing in others.

Don't worry. I am going to keep this easy, and deal with a relative scale throughout this book, where EV -1 equals a full-stop change from your metered median exposure, which I will describe as EV 0. EV +2 is two full stops from your metered median exposure, and so on. And of course, the EVs shift shutter speed, right? Keep in mind, your HDR generation program may read EXIF data along with evaluating the relative luminance of your images, and may have slightly different interpretations of the EV spacing and median image, and may describe a different image in the series as the EV 0 image. It's nothing to get too worked up about.



3 Popular Breeds of Lenses for High Dynamic Range Imaging