Lighting for Digital 4

Dave Montizambert looks at *Metering* – a lost art?

The other day Penelope Cruz stopped by place to pick up a few things she had left behind from her last visit. I told her I was in the midst of prepping for an article that revolved around Ansel Adams Zone System and would she oblige me by posing for the example images. She of course said yes and the images you see are the result of that shoot. Okay I'm lying, just another tawdry attempt to lure you into reading another of my photographic rants. The truth is the woman in the accompanying photos is not Penelope Cruz but rather another fine actress by the name of Julie Brar. Hopefully you are not too upset with me and will read on.

With that out of the way I hope you are ready for what follows because it is a mouth-full, I do however summarize it near the end.

In digital education today there is still some debate whether one should expose for the shadows, expose for the highlights, or just point a hand-held meter at the camera lens. To understand which to use we need to go back in time to understand where these concepts originated.

Back in my early film days, when I first started to learn how to light subjects and scenes, I was never really sure how to meter the results with a hand-held meter. Not unlike digital today, the question was, 'Should I meter for the shadows or for the highlights or should I simply give up and hope for the best by pointing the meter at the camera lens?' To add to my confusion I could never get a straight answer from those I looked up to; they all agreed that exposing for the highlights was out but could not agree on whether you should expose for the shadow or average the lighting by pointing the meter towards the camera. On top of this they were unclear about when to take incident readings and when to use reflective readings - I suspect they were not all the sure themselves. Looking back at the metering tips that I did glean from my superiors - metering for the shadows and pointing the meter at the camera - were not actually incorrect, just incomplete; let's fill-in those gaps now.

Exposing for the shadow is probably the most badly abused metering method of all. Ansel Adam's golden rule, "Expose for the shadows, and develop for the highlights," summarizes his B&W Zone System which is designed to control contrast through exposure and film development manipulation after the light has come from a subject. Its forte is in shooting situations where using only available light is desired or practical and where only contrast needs to be controlled, not light quality (how soft or hard is the light). If contrast control through development is not an option (i.e. colour film), or if you need control of light quality, then you need to be able to affect the light before it strikes the subject. If this is the case then you must either bring in artificial lighting such as strobe/flash and or manipulate available lighting with equipment such as diffusion flats or reflectors.

The B&W Zone System cannot be applied effectively with colour film; altering processing time for contrast control throws off colour balance. That is why when colour negative film came out, we were told to expose for the shadows and print, not develop for the highlights. The other reason for exposing for the shadows is it overexposes your colour film somewhat. A bit of overexposure is advantageous with colour negative film because the base plus fog of the film gives a greenish colour caste to the blacks in the print. If the film is overexposed then it needs longer printing time to print for the true tonality of the subject which means that the black areas, (the clear portions of the film), have light burning through their base plus fog for a longer time destroying any colour shift. This system does work to some degree, but it limits one's creativity. I say 'limits', because to keep printing time consistent, you have to keep the shadow density the same in all shots otherwise your printing time will change every time you alter the shadow density and efficiency goes out the window. This means part of your creativity has been taken away if you can't change mood in a shot through different shadow densities.

2

MONTIZAMBERT
LIGHTING FOR DIGITAL 2

The method I used when shooting colour negative film was this, with normal development I would over-expose my160 ISO colour negative film by one stop by rating it at 80 ISO, then instead of exposing for the shadow I would expose for a hypothetical middle grey tonality. This gave me consistent exposures and printing times no matter how much I changed the shadow density, plus it allowed longer printing times to lose the green shift in shadows.

The five images displayed on these pages were created with my camera set to manual and its aperture kept at a constant f4 to maintain a very shallow depth of field. These five images were lit with direct sunlight and no lighting modifiers. **Image 02** - shot at f4 at 1/1000 of a second which was a lit-side/shadow-side average exposure setting metered with an incident meter pointed directly at the camera lens – is for my taste way to high in contrast, it would be really nice if you could lower that contrast range to show more detail in the really bright areas and in the shadows. With a little metering, exposure finessing, and access to a decent B&W dark room, one can easily improve an image like this by using the methods from Ansel Adam's Zone System, which allow us to contract or expand contrast ranges for B&W film.

To set the appropriate camera shutter-speeds I did as Ansel Adams would have done and used a one-degree spot reflective meter; no wimpy I-don't-know-what-value-I-want incident readings for Mr. Adams and definitely no cowardly in-camera-readings set to 'Auto'. **Image 02** reflective meter readings are as follows: shadow side of Julie's cheek read f4 at 1/125 of a second and the lit side cheek read f4 at 1/4000 – this is a five stop difference. If all of these numbers are confusing you, please look to **Image 06** for a shutter-speed scale.

Any reading you take with a reflective meter can only tell you how to make that area you just read, reproduce as middle grey. This sounds rather limiting, however this is all we need know; once we know how to make middle gray then we can alter the camera setting to make that metered tone whatever brightness we want.

Now, how does one interpret 'Expose for the Shadow'? **Image 03** is a literal interpretation of this; the exposure was set exactly to what the meter read off the shadow side cheek, f4 at 1/125. As you can see Julie's shadow-side cheek has recorded as middle grey. I decided that I would like it to be a deeper tone than middle grey, a Zone 3 or as I like to call it, a minus two - meaning two stops darker than middle grey. To attain this I set the camera to a shorter shutter-speed, 1/500 of a second. F4 at 1/125 meter reading exposed at f4 at 1/500 will render that metered tone as two stops darker than middle-gray - a Zone 3/minus two.

Highlight- Ansel Adams referred to the lit-side of a subject/object as the highlight, I am somewhat reticent to call it this because in digital as well as in situations where you are controlling lighting contrast with lighting equipment, the term highlight takes on a somewhat different meaning.

Now that the shadow density is decided upon, I needed to place the lit-side or as Ansel Adams would have called it, the Highlight (see sidebar - Highlight). The earlier reflective meter reading off the lit-side of Julie's face read f4 at 1/4000. F4 at 1/4000 exposed at the already established f4 at 1/500 camera setting would render that metered tone at a brightness 3 stops brighter than middle grey; a Zone 8/plus three value. At a Zone 8/plus three value Julie's fully lit flesh will turn out two stops over-exposed if I did normal development, see Image 4 – to be correct, Julie's real-life-in-the-flesh flesh tone (we are talking reality here) should be 1 stop brighter than middle grey. If however you process the film for a shorter than normal time, like I did on **Image 05**, at a N-minus-two development time, the shadow will remain virtually the same and the lit side of the face will drop in value by two f-stops, making it the correct Zone 6 or plus one value.

How does this work? To understand this, you must first understand how light energy and how development chemistry penetrates a film emulsion. Modern film is made up of a layer of gelatin sitting on an acetate base, this gelatin layer contains millions of light sensitive crystals distributed through out. When light strikes the film it penetrates the emulsion affecting the light sensitive crystals. The higher the light intensity is, the deeper it penetrates the emulsion affecting not only the surface crystals but also the crystals deeper within.

3

4

5

continued on page 99 »

Lighting for Digital 4

Dave Montizambert looks at *Metering* – a lost art?

Time is a factor too, the longer the light is allowed to expose the emulsion, the deeper it penetrates. Darker areas and shadow areas send less light energy to the film emulsion affecting only the emulsion's surface crystals and few or none of the deeper crystals. The lighter tones send more light energy so more light strikes the emulsion penetrating further affecting not only the surface crystals, but also the crystals deeper within. When light sensitive crystals are exposed to light, their molecular structures are altered. It is only the altered crystals that will have a chemical reaction with the developer that results in density on the film. In processing, the shadow finishes developing faster than the highlight. This is due to the rate that the developer penetrates the emulsion. The developer reaches and reacts with the crystals near the surface first, it takes longer for it to penetrate deeper to react with all the highlight crystals. Since the highlight areas of the subject send more light to your film than does the shadow areas, it affects not only the surface crystals but also the crystals deeper within. With normal development times, not all these crystals would be reached by the developer. If you pull the film, taking it out of the developer sooner, less of the crystals will be developed in the highlight area resulting in less density on the film, or in the outdoor scenario we just discussed, the subject's true tonality in the highlight area will no longer appear overexposed.

To summarize, we placed the shadow area at a brightness we wanted it to be (two stops darker than middle-gray) and then brought the over exposed highlight (lit-side) down in brightness from 3 stops brighter than middle grey to 1 stop brighter than middle grey by reducing development time (N-minus-2 pull processing). In essence we actually overexposed and under-processed the film.

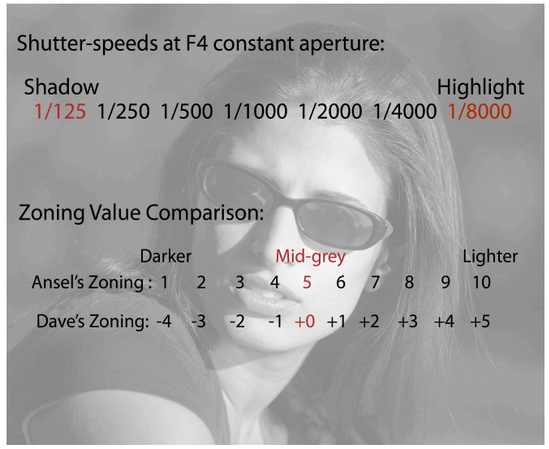
Now the part in the last paragraph last sentence where I said "…we overexposed the film…" this may be a little confusing so let me clarify: If I was not using Ansel Adams' zone-shifting, contrast reducing system and had used a reflective reading off a grey-card placed on the lit-side of Julie's face, or an incident meter pointed at the sun, then my exposure would have been f4 at 1/2000 of a second, this would render a correctly exposed grey card and a correctly exposed lit-side face when processed normal. Since f4 at 1/2000 is the correct exposure for middle-grey in this scene, then the f4 at 1/500 exposure (**image 04**) that I took would render this scene (with normal processing), as an over-exposed, high-contrast image.

If our outdoor scenario had been different, let's say shot on a flat-lit cloudy day, we could expand the contrast on the film by exposing for the shadow, placing it at a darker value, in other words underexposing the film relative to a grey-card reading, then pushing the underexposed highlight up higher in the scale by over processing (push processing). Push processing is when you leave the film in the developer longer than the recommended normal processing time so that the processing chemicals can penetrate deeper into the emulsion affecting the crystals that normal development would not have time to reach. A longer processing time has little or no affect on the shadow because light from the subject's shadow areas only affects the surface crystals which finish processing in a comparatively short time. Since there are no more light-altered crystals from the shadow area to be developed, further time in the developer has no affect.

So that in a nut-shell is the B&W Zone System, and as you can see from what we just went over, exposing for the shadows is fairly involved, you don't just meter the shadow and set your camera at that setting, it is really about placing the shadow at a tone you want it to be the final image and then placing the highlight or lit-side with processing time.

Looking at **Image 05**, if it were in colour it would be great, but I feel that for B&W it looks a little flat, and so reality is tossed out the door as I cheat with Photoshop and boosted the contrast a little with **Image 01** which makes the lit flesh tone over exposed but I think better looking. B&W is not reality anyhow.

In the end the question still remains, should I expose for the shadows in digital. The answer is a big fat 'No', digital is much more touchy in the highlight end of the gray scale than is B&W film, so in reality we must do the opposite - we need to create exposures with the highlight in mind and only use incident meter pointed at camera lens in uncontrolled situations where you can only average the available light.



6

Dave Montizambert lectures internationally on lighting, digital photography, and Adobe Photoshop. He is also a published author having written two books on lighting and digital photography (www.montizambert.com) plus numerous magazine articles on these topics in North America, Europe, Russia and Asia. Dave also creates Photoshop tutorial CDs & DVDs for www.software-cinema.com.

Dave is available for lectures and workshops in your area and can be reached at montizambert@telus.net or www.montizambert.com.

Dave Montizambert owns and operates Montizambert Photography Inc. located in downtown Vancouver. For the past 25 years his company has created photographic images to aid various organisations and companies with their communication needs. He has created images for clients such as: McDonalds Foods, Motorola, Atlanta Scientific/ Nexus Engineering, Toyo Tires, Tri-Star Pictures, Warner Brothers, Constantine Films of Germany, Chevron Canada, Cuervo Tequila, the Canadian Broadcasting Corporation, J&B Scotch, Hong Kong Bank, Chimera Softboxes, B.C. Lottery Corp., Blackcomb & Whistler Mountains, Tsing Tao Brewery of China, B.C. Hot House, Kona Bikes, No Fear Sports Gear, Kodak, and Canada Post.

His work has won Georgie, Lotus, Hemlock, *Studio* Magazine, CAPIC, and Graphex awards.