

Printing with a Variable Contrast Light Source

How to get the most out of the new Zone VI LED head

by Paul Wainwright

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Introduction

Several years ago, I purchased the original Zone VI variable contrast cold light head with great anticipation of better prints. Coming from a scientific background (I have a PhD in physics), I was excited about the promise of being able to control my highlights and shadows independently. However, I was disappointed.

As with many people who learned to print with graded paper, I was confused about how to control my prints' contrast with this new device. The control box, with its "Soft" and "Hard" dials labeled A through H, seemed at first to have too many variations. There was very little guidance supplied with the users' manual, and I could find no books or articles that helped either.

So, since this light source was designed by a physicist (Dr. Paul Horowitz), I figured I needed to act like a physicist for a while to figure out how to use it to make art. What resulted was an approach to analyzing the black & white process that I believe is unique in two respects. First, it combines both the negative and the print into one end-to-end quantitative analysis that shows the effects *on your print* of all the "variables" in your process: your film choice, exposure, film development, paper choice, enlarger, contrast controls, and print development. Second – and this is a physics thing – it plots not only the traditional reflection density measurements, but also the *slope* of those measurements. Students of calculus will recognize this as the *first derivative* of the density curves.

Why analyze the slope of a density curve? Think about what makes a good photograph. The human eye is attracted to contrasts, such as a light object next to a dark one. So it is the *contrasts* within our photographs that need to be managed, not just the tonalities. The separation of one zone from another in the print is sometimes called "local contrast," and my analysis provides plots of both the density curves and local contrast distribution as a function of *exposure zones* – what you measure in the field with your spot meter.

The exact details of this approach and its application to printing with a VC head are too lengthy to reproduce here. Readers interested in this sort of thing will find them on my web site: www.paulwainwrightphotography.com. Click on "Bibliography," and scroll down to Silver Conference 2006.

So What Did I Learn?

The primary lesson from all my research is this: a variable contrast cold light head is a wonderful tool, but it requires a different approach in order to get the most out of it. The same can be said for the new Zone VI LED head, and a detailed analysis of this head can be found in the above-referenced articles on my web site.

The most important advantage of this type of light source is that, in effect, you are *always* split printing – making two exposures on your photographic paper. Split printing is a way to control contrast by making a very low contrast exposure, followed by a very high contrast exposure (or vice versa). The overall contrast of the print is controlled by varying the intensity of each of those exposures, and/or varying their times. Because a variable contrast head has two light sources (one low contrast, and one high contrast), you need to think about your printing as a two-exposure process, even if you think you are making only one exposure with both lights simultaneously.

Because a VC head has two light sources, it is possible to go from a one-step exposure to split printing without recalculating your enlarging times. For example, with the old head, a 20 second exposure with the “soft” and “hard” controls both set on “E” is *exactly* the same as one exposure with “Soft” on E, followed by a second exposure with “Hard” on E. The order of these exposures does not matter either. Although the controls are labeled differently, the new LED head works in the same way.

Dodging and burning at different contrast settings is an important tool in making fine prints, and a VC head’s split printing characteristics makes this straight forward. Remember that the human eye is attracted to *contrasts*. By dodging and burning during split printing, you can manipulate the local contrasts of areas of your print independently from the rest of the print, and thus influence the eye of the viewer. As with any control, this can be overdone, but used carefully it is a very powerful method of expressing your feelings in your prints.

Another powerful quality of a VC light source is the ability to fine tune the overall contrast of the print. Let’s say you have your print almost the way you want it. You’ve picked exposure settings for your “soft” and “hard” exposures, and you’ve done some dodging and burning. (See my web articles for a step-by-step procedure to get you here.) However, you would like your shadows to be a little less dark. With a VC head that’s easy: simply back off on the intensity of the “hard” light, or decrease its time. You will open up the shadows, slightly lighten your mid-tones, and have virtually no effect on your highlights. The “soft” and “hard” settings are like having control knobs on your highlights and shadows, respectively, and you can darken or lighten either by increasing or decreasing their respective settings. No other enlarging light source can do this!

Conclusions

As with any artistic medium, the more you understand your tools, the better able you will be to control them. I’ve grown to love the Zone VI variable contrast cold light head, and I look forward to working with the new LED head. I invite you to read the

how-to articles on my web site for my detailed approach for printing with the VC cold light, and for a suggested approach to printing with the new LED head. Go to www.paulwainwrightphotography.com , click on "Bibliography," and scroll down to Silver Conference 2006.

Paul Wainwright holds a PhD in physics from Yale, and has been making black & white images for more than 40 years. In 2001 he retired (he hates that word) from a long career in research at Bell Labs to pursue large format fine-art image making full time. His interests include details of landscapes and architecture, and applying his research background to make the more technical aspects of photography simple to understand. Paul lives and works in Atkinson, New Hampshire, and teaches advanced workshops at the New Hampshire Institute of Art. He can be reached at info@paulwainwrightphotography.com .