

KEEPING PACE

A Monthly Newsletter Devoted to the art of Darkroom Photography

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Understanding Contrast and it's Importance in Quality Printing

The world of quality photographic printing, whether it be in black and white, carbon, or color, using dyes or pigments such as those used in the Dye Transfer, Cibachrome or the Carbon processes is on the rise.

Increasingly, galleries and museums are depending on receiving quality images that can be collected for posterity, or for their aesthetic use as decor in a home.

Consider the dramatic events of the past few years. The commercial Dye Transfer print has been replaced by the scanner and the computer, but the art field has been enriched by the increasing use of quality Dye Transfer color for fine art work.

The color prints of Elliot Porter, Harry Callahan, David Meunch, Ray Atkin

son, and many others has awakened the public about the availability of quality prints and has increased the demand for color prints.

Black and white prints that were printed in the early days of photographic history are collected for their value as unique historical works of art, not necessarily as "fine art."

I once made a print from an original negative made by Mathew Brady's showing the connecting of two rival train companies stretching across the American west. It is a valuable historic photograph, but not necessarily a "work of art."

To be considered a work of art, (in my personal opinion) a quality print of an interesting and moving image is most important in being perceived as a "work of art."

In order to be considered "Art" the work must be able to withstand the test of time and be accepted by a larger than normal viewing audience.

No one really knows what will be considered "art." Some of the hideous junk that I have seen over the years, that some have considered "art" has left me with the belief that few really know what constitutes "art."

All I know is that when a picture moves me, and makes me wish I had taken this particular image, or made the print, to me, it has considerable value, especially if it is hung in a prestigious art gallery.

I have always believed the making of a print to be just as important as the exposure of the image.

Without the image, there is nothing.

However, with a great image captured on film, there is the possibility of a great print further enhancing the image and making it a worthwhile work of art considered for possible value in a gallery.

As most of you know by now, I have a slightly different approach to the making of an image, whether it is a Dye Transfer print, Cibachrome print, or with the UltraStable carbon process.

To me, the most important feature in making a print. (besides cropping and proper composition) is to **first produce the ideal contrast range**, then the correct density, the best highlight definition and open shadows, and finally, the best choice of color balance that displays the best features of the image.

Imagine a picture of the grand canyon that was blue in it's pre-dominate color, when we would expect the image to be warm, instead. The fact that the color balance didn't reflect the expected balance that we are used to seeing doesn't necessarily mean that the print was made improperly, but if the blue cast was inventive and used to create a different image, then that would be fine.

However, if the blue cast was not correct for this image, it would probably not be considered for gallery acceptance. But, again, I may be wrong.

I once made a Cibachrome print for Josef Muench. It was a shot of Monument Valley. A scene that is usually a predominately warm magenta or orange color balance. This particular image was photographed just after a summer storm and produced a purple scene.

It wasn't the usual color balance associated with this valley, but the purple balance was intriguing. It was a fabulous photograph. Color, like beauty, is in the eyes of the beholder.

The beauty of the various color processes has been well established during the past few years. The Dye transfer process has held the title of "king" for many years because of it's ability to be manipulated in any direction and in any color.

Cibachrome is a simpler process to work with and has a very long life expectancy, but it's grteatest asset is it'e ability to produce subtle or rich colors with amazing clarity.

The newest process to hit the fine art field is the new Carbon process known as

"the UltraStable" color carbon process. This is a carbon process invented and nurtured by Charles Berger.

This color process is completely controllable and has the added bonus of long life. The life of an UltraStable print in the hundreds of years.

This process requires that screened separation negatives be used.

As a result, the prescribed manner for producing these screened negatives was to send the transparency to a scanner company and have screened separation negatives made to the print size.

This is slightly costly bu tit's main drawback is the inability of the artist to control his image, unless you own a "workstation."

If you have the means to obtain a work station you can then manipulate the image in any fashion you desire and have negatives made to fit your own specific imagination.

The only drawback to this idea is that the company making the negatives must have the same color balance in their procedures as you do.

Will his printed image match what you saw on your own screen?

What is needed to get this marvelous process into the hands of quality conscious color printers is a **workshop** that can educate 6 to 8 students at a time in the proper methods required to make great images, and to illustrate the kinds of necessary equipment in order to make these images with relative ease.

I am putting out a feeler with this newsletter. If any of my subscribers think that such a workshop would be desirable, let me know.

I would like to explain how I derive my methods of photographic printing, whether it be in black and white or in color. The first thing that interests me when making a print is the fact that I want to know what the correct contrast range should be. Without knowing what the correct contrast range for a specific print should be only forces one to work blindly and to hope that the final result is acceptable.

I hate to work blindly. I want to know what kind of "look" the image will have when I am through with all of the steps.

Lets begin with the original film itself. Any transparency will look pretty good if it is exposed correctly.

The eye will take into affect the differences in density, color balance, and contrast. The eye is a wonderful piece of machinery. It will change depending on the image we are looking at. But when we prepare to make a print, the print material is not as easily changed.

Let us examine Cibachrome. It has a fixed and limited contrast range. When choosing the transparencies that we want to print with this particular material, we can try to find less than normal contrast in the transparencies. Some times we can, but most times we can't.

The first reaction from un-knowledgable color printers is that Cibachrome is too contrasty. As most of you know by now, I am a fierce advocate of contrast masking, among other things. Any transparency can be improved when making a Cibachrome print, or any other kind of print, if the printer understands how, and resorts to making an accurate contrast mask.

Most commercial labs that advertise in photo magazines and offer a 16x20 Cibachrome print for around \$35 do not know how to make masks for contrast reduction.

If they did, they would ask for considerably more than \$35 for a 16x20 print.

My method is simple.

1. Find out what the contrast requirement of the transparency should be before making a mask.
2. Make the mask fit the requirement.
3. Make the print with the contrast mask in place and in register.

What about Dye Transfer?

1. Find the requirements for a set of contrast masks for the Dye Transfer materials.
2. Make the masks before making the separation negatives.
3. Make the separation negatives fit the required contrast range.

How do I go about making the correct decisions about contrast and density?

With any material, I first determine the required density of the **enlarger and the material** by placing a 21 step grey scale, mounted with opaque material and place it in the enlarger. The image of the grey scale is sized to fit on any original-material.

Regardless of the kind of final material to be used,

such as Cibachrome, Matrix film, Black and white, Carbon, or any other process, I then make a series of different exposures of the grey scale so that one of the exposures will be adequate for examining the high and low areas.

If the material is Matrix film, then the matrix film should be processed (normally) and dried, then dyed cyan and transferred to a sheet of dye transfer paper.

The result is examined through a red # 29 filter. Looking through the red filter, (which normalizes the cyan) one can see where the highlight and the shadow areas lose their detail.

Mark these two extreme ends.

Using a densitometer, these two opposite ends are then measured on the original grey scale in order to find it's contrast range. This is the required density range for that material.

This system works with any "final material" such as Cibachrome, Black and white paper, Carbro pigments or Carbon prints, Type R, Type C, Fuji papers, Agfa. etc. The list is endless.

Once you know what the required contrast range should be for any material, then the transparency can be masked to fit this range.

In the case of Dye Transfer. An extra step is involved because the making of separation negatives must also be addressed after the masks are made for the transparency.

In the case of Carbon printing, we have two problems. First is the recognition that a specific contrast range be required for making a print. But, how is the problem of correct exposure determined.

If you work from enlarged separation negatives and are certain that the color balance is accurate, the actual exposure is made (by contact and using a platemaker) so that the correct detail is produced from the negative.

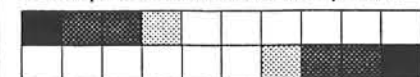
If you use two opposing grey scales (illustrate) make a series of contact exposures using different exposure times. Find the one that has the middle steps in the correct position.



Original opposing grey scales



This represents the correct exposure



This represents under exposure



This represents over exposure

What I am saying with all of this technical jargon is this:

Every system has it's own contrast requirements, and it is up to you to be able to find out what they are, and produce a set of masks or negatives that will contain these contrast limits. The developing times used in producing any color material has been determined by the manufacturer and must be adhered to unless you want to distort the curve shapes of each color layer.

Masking is the only practical answer in order to correct the contrast problem associated with making color prints.

The Dye Transfer process is unique in that it is all up to you, the printer, to establish the contrast level, the color balance, and the correct density level in order to make a quality print. You begin with raw film and dyes. It is all up to you.

In some respects, the UltraStable process is also up to you.

Color enhancement in making Cibachrome prints is a challenging technique to master.

Let us imagine that you have a scenic transparency of the Grand Canyon. The image is of rocks and strata. The colors are primarily on the warm side and perhaps you

would like to enhance them even further.

One method to make changes is as follows:

Using separation filters, make a contact exposure of the transparency using any Pan Litho film (such as Agfa's P 911 or Fuji 100)

Use a green (# 61) filter. The film must be handled and processed in total darkness, so a method of determining the correct exposure must be used in order to produce a properly exposed sheet of film.

I suggest using the opposing twin grey scales in order to find the correct exposure.

Once the pan litho has been processed, you will see that the red areas will be clear and the green areas will be dense.

After making an initial exposure on your material, remove the enlarger carrier and add the mask to the transparency, in register of course, and give the material an additional exposure through the red filter if you want to increase the warm brightness, or through the green or blue filter if you want to make the brighter area less colorful.

This simple explanation is just one of many enhancements that could be added to your printing tricks.

If you are ever tempted to make a print using some of the photo composition techniques, here is one example of how to add a 2nd image to an already existing image, using a key line.

If you are working from a layout, first copy the layout with litho film.

Using a register system and pin glasses, Place the punched layout on the set of pins.

Punch a sheet of red frisket material (Rubylith.)

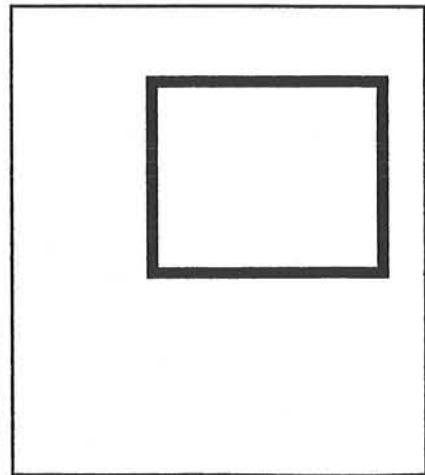
Cut an open frisket that includes all of the insert plus the key line.

Using reversable film such as Kodak's LPD 4, make a contact exposure of the cut out. Process the film in any contrast developer. I prefer Kodak's RT developer.

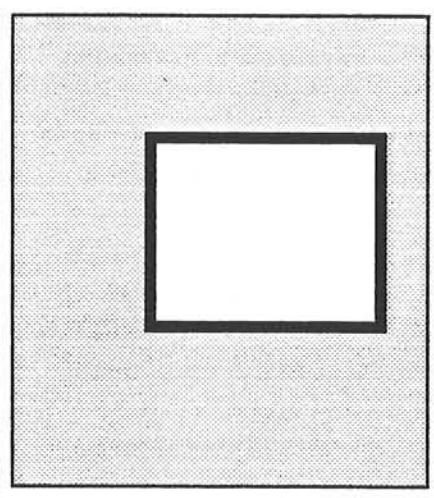
Then cut a frisket that does not include the insert but does include the key line.

Then make a reverse image of the key line and use it to burn it in.

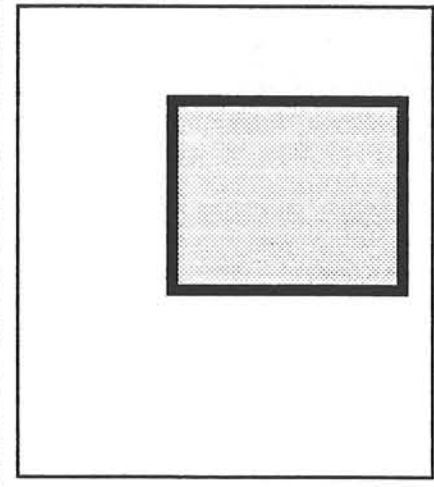
The following examples will show you what I mean.



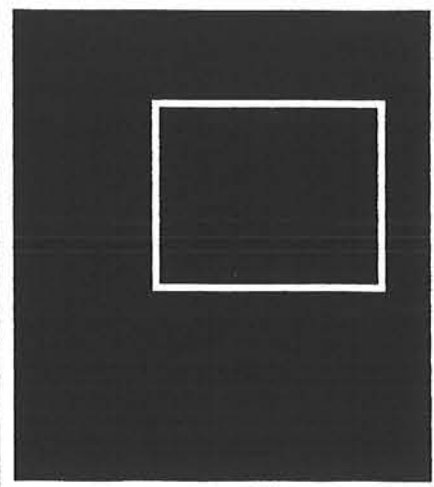
The layout.



Cut the inside frisket and include the keyline



Cut the outside frisket and include the keyline.



The reversed keyline, ready to expose a white line

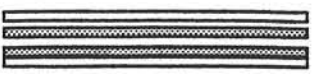
There are so many different applications and methods used in "photo comp" that it probably would take a rather large book to do it justice.

The main method used to obtain a "master" image from which all other images can be made is as follows:

1. Shoot a litho negative from the original layout.



2. immediately, by contact, make a duplicate negative using Kodak's LPD 4 film. This is the master.



The bottom sheet is now the master. It should be right reading, emulsion up.

Punch this sheet and some sheets of Rubylith film. Using a pin registration system, combine the Rubylith film with the master, and cut out the different areas that need different exposures for color or whatever.

Make a contact sheet from the master and any Rubylith selected area. This final sheet is the actual piece of film used to expose the internegative or transparency film.

If a reverse image is needed make it from the master so that all final negatives will have their emulsions facing

the same direction. This is imperative.

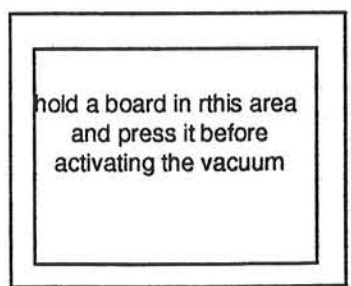
Use the color enlarger as a variable light source.

A vacuum gasket easel is a must in order to accomplish a perfect cementing of the different sheets of film.

Condit makes such an easel.

My experience has led me to use a powerful vacuum pump.

Most easels that work with the ability to hold two or more sheets of film in perfect vacuum have one similar fault. The vacuum lines that are positioned along the outer edges of the film have a tendency to grab the edges of the film, but sometimes leave the rest of the film with a bubble of air trapped between the films. In order to eliminate this problem, I use a stiff sheet of board, placed between the opening of the gasket easel and press out the air before I activate the vacuum system.



This method is not fool proof and must be practiced a few times before you get it right.

But, how about a contact

frame? Has this been used before? Of course.

The only disadvantage of using a contact frame is the addition of two more surfaces that can (and will) pick up unwanted dust spots.

I have already written a book about Photo Composition that went into the more complicated areas of strip-ins and soft edges. I can see the need for another book about the simpler aspects of the process. Some day, perhaps. With the growing use of scanners and computers, the old methods used in the world of photo comp as I now know it will be completely changed in a very short time.

One of the problems is the ability of the computer to choose a Pantone color. Unfortunately, the photographic color emulsions have difficulty in matching about 50% of them.

The next time you are in an airport or bus depot, look at the advertisements for local enentertainmentr car leasing.

Most of these large prints are made via a photographic stsystems I have been discussing for many months. These are usually Kodak Duratrans or Type C prints. Check them out carefully and you will see what I mean.

Can you figure out what methods they used?

One of the most critical stages of darkroom processing is temperature control. I have been at war with this problem for many years. As a result, I have had many different plans and methods to combat this problem. Some of them have been expensive, requiring a heater and chiller operating in tandem, and I have also offered suggestions about using ice cubes locked in a sandwich bag and floated in the specific tray.

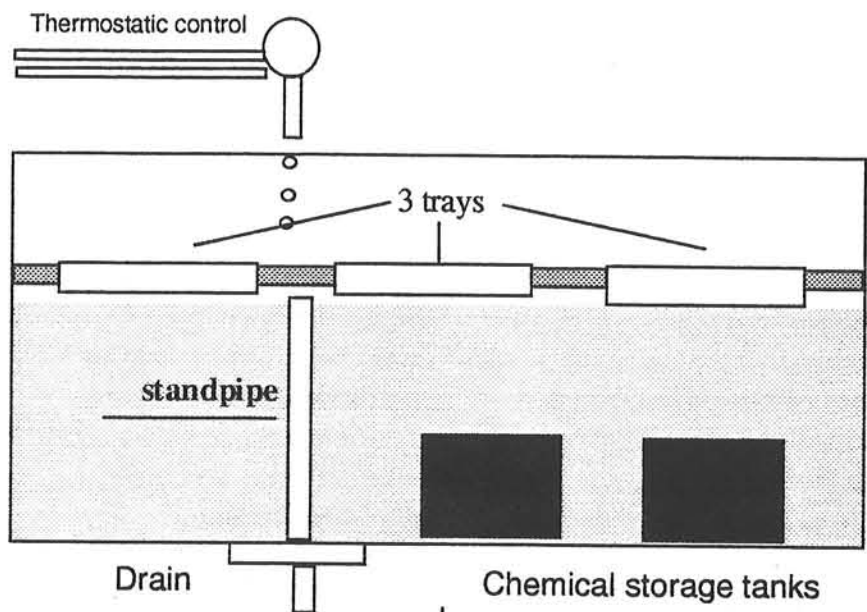
However, one area that I have rarely talked about is the use of a thermostatic temperature controlled faucet. There are many companies on the market. Powers, Delta, and Hass, are among the better known brands.

If you have such a unit then the rest is just woodwork.

By building a tank which can act as a sink, place a board across the top area and drill some holes in it.

Then, cut some shapes in it to accommodate three trays. The trays will sit in tempered water, provided by the thermostatic temperature system.

The chemistry needed for processing can also be placed in tanks submerged in the water bath, connected to the outside wall of the main tank and fitted with push button faucets.

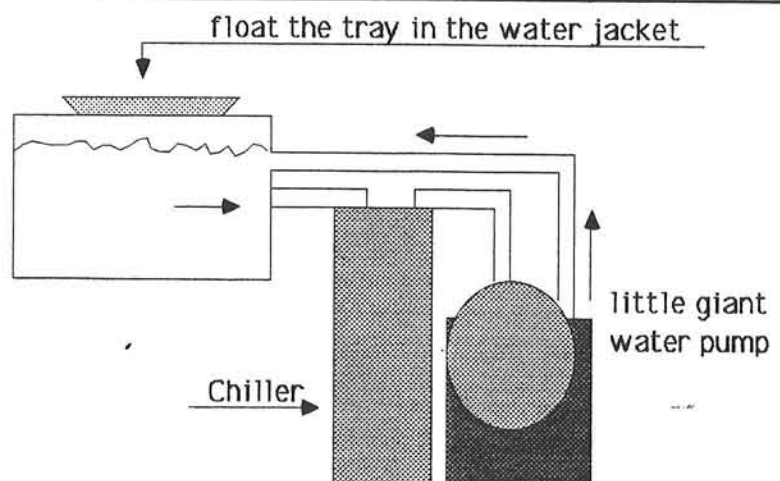


This system of temperature control is simple, inexpensive and very accurate. Just allow a small trickle of water to drip out of the main faucet, at the correct temperature and the main tank will remain constant. On the other hand, if the room is so warm, that the trickle of water is insufficient to cool off the main tank, then run more water. If you are in an area where water is at a premium, then an alternative system would be better.

If you live in a area where the summertime water leaving your faucet is close to 75° or more, then the alternative method of employing a cooler and bypassing the warm water is the correct way to go.

There are many ways to skin a cat.

Make sure that you are concerned enough so that temperature control is not just a series of words.



What has the advent of computers and scanners meant to the rest of the photographic world, besides making many labs obsolete?

Let us begin with stock houses.

I began working as a black and white printer with a New York photographic stock company called Ewing Galloway.

The company employed 4 salesmen, an office staff dedicated to mathematical computations (keeping track of where photographic prints were and who owed what.)

The company also employed 2 full time black and white photographic printers. The day began like this.

Potential buyers would come to our office looking for a specific kind of photo that could be used for reproduction in a magazine or book.

One wall in our office looked like the storage shelves in a library. Thousands of 8x10 boxes with prints stuffed into each box had to be reviewed by our clients.

For instance, if a shot of the Statue of Liberty was needed, then the potential buyer would sift through many boxes of Statue of Liberty prints, each containing a different angle and different look than the previous one.

We had all of the negatives that belonged to each image numbered so that we could find the exact image.

This meant that we had to have the different contrast emulsions of two different brands of paper. (Kodak and Agfa.)

The paper ranges were from 1 through 5.

The logistics of such a company was staggering. They owned or controlled one half million black and white images, and about one hundred thousand color transparencies.

Orders came by mail, phone and personal contact.

It was here that I learned to become a qualified black and white printer. These prints were all used for reproduction. They had to be good.

Today's stock houses began in the same fashion, except that they have millions of transparencies in stock, and probably very few black and white images.

The Image Bank, which began in San Francisco quickly became the company to emulate. Many did.

However, the same problem existed in logistics. They would send duplicate transparencies to clients all over the world in order to garner a simple "one use" order.

The cost for a one time use could be in the thousands of dollars, and even more for a complete buy out.

How is it done today?

What a difference.

Today's stock house has offices all over the country and even abroad.

Images are called up on a computer screen. The client can go through thousand of images and when the desired image is chosen, a dupe transparency (a quality image) is sent to the client or if necessary, sent by modem over phone lines.

One art gallery based in Los Angeles, has such a computer system networked all over the world so that a potential art buyer can scan the inventory of the company and buy a Rembrandt over the phone.

This has expanded to include the real estate market. A buyer from Europe can find a suitable living arrangement in New York City without leaving the company's office.

The images on the screen can be seen in still form or in live action.

But for the art buyer, or the advertising agency, or anyone interested in buying a picture, the market place has changed.

The only drawback is that the image seen on the screen still has to be an excellent quality image when viewed in real life.

Times have sure changed. For the rest of us, there is still the darkroom.

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Thank you.