KEEPING PACE

A Monthly Newsletter Devoted to the art of Darkroom Photography

Volume 50 August 1991

Constantly changing statistics

Whether you make separation negatives by contact or by enlargement, there has been a fly in the ointment for some time.

I would make tests of my negative materials in order to establish the correct exposure times for all three of the colors. I would make very meticulous plots of the curve shapes and write everything down so that I could repeat the exposures and developing times accurately.

However, occasionally, my times needed to be re-established because my numbers were different.
I have always blamed this problem on the fact that the emulsion may have changed slightly and that this was the major reason for such a decision.
I even thought that some of the problem was due to flare and that this caused some of the balance to go astray.

I have since learned the **hard way** about the reason for the problem. The bulb actually began to wear and was getting older from the first day it was used and as a result, the color characteristics of the bulb changed downward from 3200° K.

I really wasn't aware of this because I would constantly make changes every day or week and keep the new times in constant state of flux.

Do all bulbs lose their color balance as time goes on?

The answer is yes, but in different degrees.
For instance; the enlarging bulbs know as 211, 212, and 213 are used in older enlargers, such as the Omega D2 and the older Beseler's, lose their ability to hold the true color balance in the first day, then they peak after a few hours use, and then begin to lose again.
The newer enlargers use **quartz lamps** which are able to hold the correct color balance until they are almost ready to quit.

The pulsed xenon units rarely lose their color balance and will work accurately for many years.

The cold light units are in a different category. These aren'incandescent and are in constant change, until they reach the highest heat level.
Once they reach their correct level, then the light head must be kept lit all the time, and a Packard shutter should be used to make the actual exposure.

The Vari Lamp sold by Aristo has been used for making matrices for the Dye Transfer process for many years. It works well, but the light level and color balance must be maintained by keeping the unit lit constantly and resorting to a mechanical shutter such as the Packard.

We all face this dilemma in different degrees. Most of you were probably never aware of the problem. Only when you are working with extremely sensitive Pan Litho film will the problem easily be seen.
Recently, I was in the process of making a set of screened color separation negatives for an entertainment catalog, here in Las Vegas.
I worked two full days on determining the exact ratio of exposures for each of the color separation negatives. My times were (and still are) quite different.
The **red** filter needed only 6 seconds to make a correct density exposure on the Pan litho film, using a pre-angled screen.
(We used the Q-6C grey scale guides to establish the correct exposure.)
However, the green filter required 64 seconds to produce the same density in the grey scale section of our separation negative.
The blue filter is the real problem. My exposure jumped to 280 seconds in order to reach the same level of density required for this separation negative.

The black printer is a different story because I make my black printer from a 65% portion of **each color filter** to establish it.

As you can easily see, these longer exposures will take a toll on the life expectancy of the overall color balance of the bulb.
What did I do in order to establish the correct exposure for each color?
I used my Wallace Fisher meter to determine what the actual light level was through each color after I determined my balance.
I fond that the light level on the easel, with an empty carrier, and just the Red #29 filter in the filter drawer was Red filter -.45. The green replaced the red filter and the reading was -.85. The Blue filter replaced the green filter and it's reading was -1.40.
Notice that all of the readings were in a minus mode.

Let us review this situation.
The red filter read -.45 and needed 6 seconds to expose the sheet of Pan Litho film through a pre angled screen.
The green filter read -.85 and required 64 seconds exposure through a different pre-angled screen.
The blue filter read -.140 and required an exposure of 280 seconds.

I made a set of negatives using this set of established times and came out pretty accurate. The eventual 3M color keys proved this fact.

However, the very next set oflight levels didn't read the same. I set the red filter into position and by using the lens *f* stop, adjusted it until the easel reading was -.45.
I then read the green and blue and got two different readings than I had before.
This meant that the long exposures had done some damage to the color balance of the bulb.
The readings I got this time were as follows:
Red -.45
Green -.81
Blue -.120

This meant that I had to increase the exposure for the green by .04 (log) and the exposure for the blue by .20 (log.)

Using the log scale on my scientific calculator (TI 30) or using a slide rule I was able to establish that I needed 4.1 more seconds exposure for the green image.
The difference of .20 for the blue meant that I had to increase that exposure by 163 seconds to a total of 443 seconds.

Did the grey scales match each other? You bet your life they did.
But this method seems to be to clumsy and time consuming.
A simpler method would be to add color compensation filters to the filter drawer and try to keeptrack of the light levels and keep the exposures fairly close.

The object here is not to try to open the lens for the long exposures and stop it down for the short exposures. Playing with the *f* stop can result in focus changes and differences in position, because all lenses are not perfect and will change the image as you fool with the *f* stop.

What I eventually did was to add cc color filters to the proper steps in order to make life a little easier. Since the main difference I had in my set of numbers was caused by the blue filter I added a .20 Blue (20 cyan and 20 magenta) to the filter drawer. Then I added the red filter to the drawer and re-established the light level to read .45. I then read the green and removed the cc filters from the pack and read the blue. The numbers were much closer.
The green read .84 . and the blue read 1.38.

This was close enough for me to use my original exposures of 6, 64, and 280.
I also used an exposure of 65% from each of the negative exposures to produce a black printer.

Can a set of negatives made in this fashion be accurate enough for making an Ultra Stable Carbon color print?
Maybe not, but for inexpensive color negatives for a small pamphlet or newspaper ad, these will be more than adequate.
The best solution is to use a **color head that is equipped with a quartz lamp.** The lamp will insure long life and at the same color balance and the color head can be used to keep the color readings in perfect alignment.

All that would be necessary to do is to read the color of the lamp just after you finish making your tests and are satisfied with the results. Then prior to starting a new job, a careful reading of the color of the light on the easel, and simple dialing in, in order to repeat them.

Can this phenomenon occur with any other process?
Yes it can and does.

If you are making Ciba prints and have very long exposures and must deliver 10 exact duplicate prints, and you are not equipped with a quartz lamp, good luck.
Make it a habit of reading the color quality of your enlarging lamp by simply reading the "good" setting through a meter that will read each color separately.
The Wallace Fisher will.
Does your meter function as well?

A few months ago I wrote about **Don Mitchell's** optical system for producing top quality comps for the commercial and advertising fields.
I have been looking at much work done by scanners lately and they do look fine, but I think the quality of Don's system is better. Perhaps not as fast, but the results are great. I understand that if much retouching is necessary, it may seem simpler to use a scanner and work station, but from the results that I have seen by Don's system and the quality of **Bob DeSantis'** dye transfer comp prints, the overall quality of the optical system seems to have the edge.
Elmi Graphics of Los Angeles has been using a very expensive and top of the line scanner and workstation system that seems to be working very well. In fact, he has two such units.

I am aware that I seem to examine this whole scanner versus the optical systems from all sides and see great results with each system.

The bottom line is this. Can you afford to have a scanner if you are an individual technician making prints for yourself? I think not.
Do you need such a system in order to get your work hung in a gallery? No.

If you are in the commercial field and are producing photo comp work every day and are producing complicated large 30x40 prints and bigger, then at least a work station system is for you.

I recently received a call from a subscriber asking about the **UltraStable Carbon process**.
He wanted to know if it were feasible to make enlarged continuous tone separation negatives and still use this new process. I don't see why not. Screened negatives are not absolutely essential.
If you can make accurate and detailed separations to the size of the print, and have a large contact frame or vacuum easel, I think it would work fine.
The only reason for making fine screened separations is that large negatives are difficult to produce by hand.
If you can make enlarged separations from a small original to an 8x10 size, then there is no reason that you couldn't go to 20x24.
You may have to learn some new tricks in order to handle large film.

The improved results from making enlarged final images in incredible.
There is a good reason for making large separation negatives besides the need for the size with the carbon system.
I used to have much difficulty in producing good prints from specific kinds of original transparencies.
If I received a transparency of very **dark areas with small but very defined lighter images hidden in the dark areas.**
These prints always came out with little detail in these little light areas, or any where else.
For instance:
I have a 2 1/4 transparency of the front of a Rolls Royce auto. The grill work is exquisite. It has details that won't end.
Much of the grill work is dark, but the image is sharp and detailed.
I made enlarged separation negatives. The negatives were full of detail.
The print however, was lacking detail in the grill work. The entire grill looked as if it were fogged. (It was.)
The empty areas in the negative produced flare in the making of the matrices.
This effect ruined the print.
I made a Cibachrome print from the same transparency and it looked fantastic.
I then realized that the flare factor was present in every original that needed to be enlarged. It didn't matter if I was enlarging the original transparency or the negative.
The negative gets most of the credit for causing flare.
When I discovered the reason for this problem I began to experiment.
I had one job to print of the interior of a piano.
The transparency was almost all black except for the piano strings and little white hammers.
I decided to make a set of enlarged separation negatives on **Kodak's Separation Negative Film # 2.**

I took the time and used my condenser Durst, fully equipped with the correct registration pins and punches.
I established the correct exposure times and developing times in one long session that lasted more than one day.
The next day I used a large vacuum, frame using low register pins supplied by Condit Mfg. and used a point source high above the easel.
I made tests for balance, and when I was satisfied made a set of matrices.
The print was one of the best that I had ever made from an original that I usually had difficulty with.

This technique became an important part of the method that I was using at the time.

I still subscribe to it as a method of making great prints from darker than normal images.

A short course on when to use this system.

If you have a transparency of a white handkerchief against a white background, make contact separations. Because the separations will be sharp and dense. The flare factor was removed by making contact negatives. Contact does not cause flare. However, we want the denser negatives when making the matrices. These will not cause flare.

On the other hand, if you decided to make a set of enlarged negatives from this same handkerchief shot, the image will flare and the negatives will be flared and fogged.

However, if you have a person in a dark area, and wearing a dark overcoat that has little white stitches in the clothing, make the separations by enlargement to the size of the print.

The results will startle you.

The flare will not occur in the enlarging stage because dark images do not flare. The resultant negatives may be thin, but the fact that the image is now to be contacted on to matrix film, the flare is removed.

This was the argument that **Edward Weston** used when asked why he always shot 8x10 and made contact prints. He did not want the flare to creep into his photos and spoil the effect that he was after.

On the other hand, **Ansel Adams** shot rather large originals and made enlargements using a diffusion enlarger.

The difference is this, He shot large images and only printed them two or three times larger.

If there were details missing in the dark areas, only Ansel would know. But when you have a transparency to compare to, the case is totally different.

Does using a rather sharp lens help to reduce flare?

Yes it does.

Does using a point light source make a sharper image and help get rid of some of the flare?

Yes it does. But in my opinion, making the larger image is the way to go. You can use a point source when exposing the matrices in the enlarger, if necessary, however I feel that it would be too sharp.

A new trend among some portrait photographers is to use a large 20x24 camera, and a converting lens prism and to shoot a direct image onto Kodak's Type R (Ektachrome paper) and produce a full size image with incredible detail. Is this a valid system?

Yes it is but I would still rather use a better material than Type R for a long lasting image.

Could this technique be used with Cibachrome?

Yes.

The only problem is filtration. You may have to place the filters over the lights. Make tests using strobe lights and keep the lens almost wide open. With any direct material, and this kind of system you must use an image converting prism.

What about contrast control. This is where the **Dye Chrome Research** company could really be used. The contrast could be worked out in advance, the lights could be pre-set and the chemistry could help produce a beautiful image. It is impossible to make masks that could be used, unless the image was inanimate. But even that would mean producing large sheets of masks , that had to be replaced in register in the camera back. Too impractical.

One of my dreams is to trade my Macintosh Plus computer in for a more powerful system like a Mac 2 Fx or 2 CI. Then I would purchase an 8 1/2 by 11 scanner (Microtek) and find customers that wanted to have their old faded and torn images restored.

Instead of copying these old images, processing the negatives, making a work print, do all of the retouching with standard equipment such as air brushes and paints, then copy this image and make brand new prints, and losing much of the quality because of making repeated copies, **I would use a new approach.**
Scan the image, and using the equivalent of a work station,(such as Photo Shop) place the image on the screen, make the contrast corrections and do the retouching with electronics, and then output the image to a disc, send this disc to a Linotronic service company, and get back a fine screened image that could then be made into a great new black and white print or even a carbon print.
The image would look normal as the curve shapes were not distorted. by copying.
The retouching could not be seen on the surface of the paper, and all in all, a better way to make restorations.
Some day.

One of my subscribers asked about Kodak's commitment to keep producing matrix film and the necessary dyes.
I told him that I thought that Kodak would not get rid of the most prestigious process ever invented and not to worry.

National Graphics in St. Louis Mo. has the capability and the means to produce the film. This all you really need.
The formulas for the process and the dyes are available elsewhere. You can use any panchromatic continuous tone film for the separation negatives. The paper is simply Kodak's Elite with the silver fixed out.
This Dye Transfer process is still the best process ever invented because of it's ability to be manipulated and transformed. A print can be made with such subtleties that it really defies the imagination.
I once made a series of prints that depicted the four seasons using the same set of matrices and by changing the balance and contrast was able to fool the viewer into believing that they were made from different matrices. This wasn't an easy task, but it was done.
Another good reason for the popularity of the process is the fact that it is the one of the two archival color processes known to man. The actual print won't last as long as the new UltraStable Carbon process, but the matrices will last as long and so will the separation negatives.

Speaking of the UltraStable Carbon Process, I plan to make available a never before published photo of **Marilyn Monroe.** This is an out take of the famous session that was shot by Tom Kelley in the late 1940's.
I plan to use the new image and make a set of enlarged screened separation negatives and produce some limited edition UltraStable color prints. These will have quite a value.
The original transparency was faded and considered a loss. Tom gave me this original before he passed away in 1984. I had it in my files for many years. I recently decided to try an experiment in restoring the transparency back to it's original color and contrast.

The method I used was a little different.
I made separations of the original, as faded as it was, then made matrices of each color, bleached them using Potassium Permanganate, and cleared them with common hypo,washed and dried them. I then dyed them in their respective colors, dried them, and added them back to the original transparency using registration pins.
I had to make three cyan matrices, for color as well as contrast, one solid magenta, and three yellow matrices, for color and contrast.
The combination looked good.
I then made a new dupe transparency from this sandwich.

The magazine known as "Darkroom Magazine" has promised to run the entire descriptive story about the method I used as well as the "before and after" images in the December issue. Keep your eyes open for it.

I recently had to produce some black and white prints from some somewhat flat negatives shot with a 4x5 view camera of the Boulder Dam.
I had made prints of the same negatives only a month earlier.
I used Kodak's Elite # 3 SP. This paper has a slight sheen but is not a glossy material.
The quality of the paper is outstanding. The blacks wre black and punchy and yet the details in the rest of the photo were great.
I think this paper is about as good as it can get, however.
A much more exciting black and white print can be made using the matrices and the dyes in the Dye Transfer process.
Try this the next time you are able.
Make three identical images from one negative, adjusting the contrast to be at it's best for the image. Make 3 exposures, and place the finished matrices in the cyan, magenta and yellow dyes.
Run a straight print and look at the differences .
Then use your imagination and make even more excitement by using your skills and imagination to make contrast changes and white brightening effects with the simple controls used in Dye Transfer.
You will be quite surprised when you see the difference.

I recently had to make an 8x10 internegative from 4 separate sheets of paper that had some graphic art images printed on it.
It will eventually consisted of lettering against a background of different colors.
The client asked for specific color matching using the Pantone color matching set.
In making the color matches, I was forced to use the old method of finding the closest color by exposing a series of colors on Ektachrome film onto internegative film.
The trick here is to use the enlarger as the light source so that you can adjust the light levels when you change filtration.
I used four different sheets of color, and contacted them to a sheet of Kodak's 4114 Internegative film using my best estimate of the correct exposure and filtration.
When the negative was processed, I then had a proof print made and examined it.
I used my judgement and made some slight adjustment to the filtration and corrected the light level each time.
I then exposed all of the elements in their proper order, processed the negatives and presented it to the enlarging dept.
This system would have worked with much more ease and accuracy if I had used the Peterson's "make and match" system.
Some day.

If any of you are interested in learning more about the Carbro or Carbon processes, a book written by Luis Nadeau called "Modern Carbon Printing" is available from

Light Impressions
439 Monroe Ave
Rochester NY 14607
716-271-8960

This booklet is not expensive and contains a wealth of information about the old and new processes, formulas and methods of coating the pigments to a receiver sheet.
The best part of this process is the fact that all you really need is a flat surface to work on, a few trays and an ultr-violet light source. This last item can be purchased from any graphic arts supply company. In fact, Luis Nadeau even tells you how to build your own light source for around $200.
Every city has at least 2 or more litho companies that use scanners and can provide the negatives.

I keep writing about the almost unlimited amount of controls available when making color prints via the Dye Transfer process.
I mentioned that the contrast of the image can be controlled by masking, by the amount of developing time when processing the separation negatives, and also when developing the matrices. **This is just the beginning.**
Suppose that a set of matrices were made and looked pretty close to the transparency, and you were happy with the result. Then along comes a client, or a friend, or someone who claims to be a critic and says that the contrast is too flat. No problem. You can add 28% acetic acid to the dyes and change the overall contrast of any dye by adjusting the pH.
The amount to be used is a military secret.
No one, not even Kodak, knows how much chemistry should be added to the dyes to achieve a specific result. You will have to experiment. But, believe me, the contrast will be increased.
Lowering the contrast is also a simple matter. The addition of 10% Triethylanomine to the dyes will reverse the effect of contrast. How much? Your guess is as good as mine.
Kodaks guide that is packed with their dyes is just that, a **guide.**

The highlight areas can be kept clean by adding to the rinse small amounts of Sodium Hexametephosphate (1/4 teaspoon to a liter of water) and the highlight areas will jump.
Obviously, if you add acetic acid to one color and triethylanomine to another color, the contrast balance will change. If this is your aim, fine. But suppose you want to do little subtle things to the print and are at the limits of your chemical ideas? **Try this some time.**
If your sky looks too weak and needs more density, make a weak dye color by adding stock dye to a tray filled with 1% acid rinse. Hold an un-dyed matrix film and just soak the sky area into the light dye tray. Do this for as long as you wish. **Time it.**
Place the dyed matrix film into the second holding tray and then double transfer it to the unfinished print on the transfer table.
If you want much more density in the shadow areas but do not want to over do the contrast controls for the rest of the photo, **try this:**
Make the three normal transfer of dye onto the paper. Then re-dye the color or colors needed to make the shadow change.
Make a rinse solution consisting of 50% water, 50% acid rinse, 50cc of sodium acetate, and 25cc of Highlight reducer.

The trick here is to rinse the matrix of your choice in this first solution for at least two minutes, then place it in the second acid tray, then transfer it. The rinse will have removed most of the dye in the upper and middle portions of the image leaving just the shadow areas. The impact will be great. Do this whith all three colors or any combination you wish, in order to achieve the result you are after. **Try this with any other kind of color print process.**
Any other process is limited by the amount of controls that can be used. But if you take the time and analyze the problem to be solved, you can come up with some interesting ideas. This had to be done when making Cibachrome prints. I have added all kinds of films to the sandwich in my enlarger in order to achieve the effect I am after.
This latest information is in my new version of the Cibachrome process entitled **"A Professional Approach to Cibachrome."**
This consists of a video and accompanying book. It sells for $100. plus $12 handling and shipping.

Thanks,

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