KEEPING PACE

A Monthly Newsletter Devoted to the art of Darkroom Photography

Volume 65 Nov. 1992

Why Make Enlarged Separation Negatives?

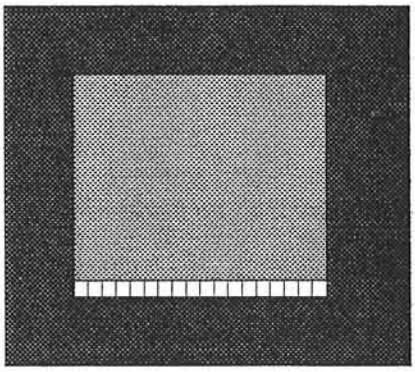
This is one question I get from subscribers, constantly. Apparently, it seems to make sense that if a set of separation negatives were made by contact, they couldn't be any sharper, and the incidence of flare is reduced. However, this is not the case or the reason

When a small original is contacted onto a sheet of black and white panchromatic film, the grain of the sheet of film is usually much coarser than the grain of the original transparency. Kodachrome film is almost grainless, and the latest groups of Ectachrome and even Fujichrome films have exhibited very fine grain.
I am asked, "How about using Technical Pan film (Kodak) for making separations?
The film is much too slow in response to some colors. Actually, the color response difference is so greatly exagerrated that it is not the best choice.

If a film such as Super XX (Kodak) is used, the color response is excellent, and even though the grain factor is higher than Technical Pan film, if the image is enlarged to 8x10, the grain of the Super XX is alleviated and the image will still appear sharp.

Let me compare my method of making separation negatives to other methods being used.

The system that is being used by the majority of color labs at this present time is as follows.
A 21 step grey scale is taped into the edge of any transparency to be separated. The image is read with a densitometer and the high and low points are recorded. Then the similar points are found in the grey scale and are marked.



The first thing that that most labs do at this point is to make set of 25% masks. Then the grey scale and masks are combined and these marked areas are used in order to find the correct exposure and developing time so that a correct negative contrast is met in order to make a set of negatives that will fit the required

range for the process. This is great. It sounds correct, and if you look at the labs that have been using this procedure for years, you must conclude that this is the way to go.

However, if you processed the negatives to too high a gamma, the possibility of reaching the "chemical fog" area would surely ruin your efforts.

Now let me explain what I do, and why I do it differently.
I have always felt that we were putting the emphasis of control on the wrong materials.
Instead of making the masks to a specific 25% all the time and "playing the accordion" with the contrast range of the separation negatives, I came to a conclusion many years ago that there had to be a better way to open shadows and keep the saturation of color from increasing or decreasing because of what I did to the negatives.
During the year of 1964, I was asked to be the west coast experimental lab for Ilford, and their new product, Cibachrome. It was during this time that I was to experiment with Cibachrome, that the germ of an idea came to me. I was forced to learn how to make masks for the Ciba process.

The material was much too contrasty for normal exposures.

The masking experiments led me to this conclusion. All printing materials that were final materials, such as Ciba, Type R, Dupe Transparencies, and yes, even type C, and Duratrans, could have their contrast levels corrected to fit **any enlarger** by masking their transparencies or negatives to the correct contrast range, prior to making the exposures on the final material.

I wondered if I could use this approach in making separation negatives.

The first thing that I had to do was to find out what contrast range my specific enlarger would produce with any given material.
The technique I decided to use was as follows:
Place a 21 step grey scale in the enlarger, size it up so that I could place more than one image on this sheet of **Matrix film,** and make a series of different exposures.

I then processed this one sheet of 8x10 matrix film in a normal mode.
(1 Part A and 2 parts B. Kodak's tanning developer).

After the hot water part of the process, I thoroughly dried this sheet of matrix film, dyed it cyan, and then transferred it to a sheet of prepared dye transfer paper.

I examined this cyan image carefully through a **red # 29 separation filter.**
I marked the print where the image just began to exhibit detail in the high and low areas of the grey scale. I removed the 21 step grey scale from the enlarger and read the identical steps through a densitometer.
By subtracting the lowest number from the highest number I arrived at a density range. **This is a key number.**
From now on, using my enlarger and following all of the steps so that I would get a repeatable result, any transparency that I would like to print and hold the details in the high and low end of the original, means that a mask must be made to fit this transparency so that it would enable you to have a "ready to go" sandwich of mask and transparency and all that needs to be done at this point is to exposeand process the negatives to a pre-determined gamma, and the correct density range for your enlarger will be the result.
Does this mean that a 21 step gray scale is no longer needed? Not necessarily. But all you really need to know now is, "what function the grey scale plays in producing a set of separa-

tion negatives.
Up to this point, the 21 step grey scale was used to identify the areas that we wanted to place on the straight line portion of the separation films curve shape. The only reason for a grey scale is so that our exposures and development times can be monitored and that our predictions for accuracy can be verified.
My method now consists of the following steps.

1. The first thing that I do is to determine the contrast range requirements of negatives that will produce a fully detailed image with my enlarger on matrix film. **I have already explained how I do this.**
2. I then choose a gamma of development for separation negatives that will insure me of not reaching the "point of no return" **Let me explain this step.**

   How long can a sheet of film be processed? It must have a point where the development no longer works properly. The highlight area will eventually reach a point where it cannot produce any more detail, while the shadows keep on coming. This is called "chemical fog". We must develop our film below this point. Making tests on a sheet of film that has been exposed through the Blue filter (47b) is the best way to find this "point of no return."
   I have found that my combination of Kodak's Super XX and HC 110 developer, gave me a clean unegatives at gamma .75
   Other combinations of film and developers can also work with the same degree of accuracy. It is up to you to find the film and developer you like. Almost every lab technician has a special like or dislike for specific films.
   Frog Prince Labs in San fraFranciscod use HC 110 for years until they became automated and switched developer and film to accaccommodatee processor they are now using. The results are still first rate.

   If I need a density range of 1.20 for my negatives, and I want to develop my negatives to a gamma of .75, then if I divide the gamma .75 into the negative range of 1.20. the answer (1.60) is the correct required contrast of my **combined mask and transparency (CMT)** before I make any exposures or development.

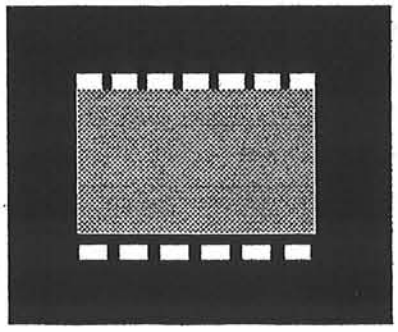
My formula for working up, a job is as follows:

Original transp. density range..... 2.30
the required CMT 1.60
the difference is .70

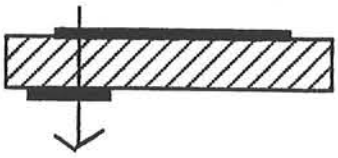
If I divide the difference of .70 by the original transparency density range, 2.30, the mask percentage required is 30%. Therefore, if I make a 30% mask, the highlight and shadow portions of this particular transparency will print with detail. The negative will have to be developed to the same gamma.

This is just the beginning. At this point in time, it is possible tto introduce different filters or combinations of filters to enhance or to change the overall warmth of the final results. This is known as split masking.

3. The procedure that I have been using is as follows:
   I mount the 35mm transparency into a larger sheet of film. (2 1/4 sq.)



The three step grey scale is used by placing it on the bottom side of the glass before the masks are exposed. This eiiminates any problems with the thickness of the film being an obstruction.



I position the grey scale so that the three steps appears through the sprocket holes of the 35mm transparency.

The three step grey scale represents the straight line portion of the negative film curve shape. This grey scale will only be used as a guide in determining whether or not I have reached the correct gamma and contrast range in the image.

If I use a 2 1/4 transparency, I again mount the original in a larger sheet of film (4x5) in order to keep it from getting damaged by constant placing and removal from the register pins.

If I can't place a grey scale into the edge of the film. I will then tape it under the contact glass and place it at the edge of the film. I will then punch half moons into the black edge of the transparency so that the grey scale will show through the edge of the film.

In other words, my system is to place the masks and original transparency **together with the correct contrast before I make separation negatives.**

In the case of Cibachrome printing, I make sure that the correct contrast range of the combined transparency and mask has been met before I make any exposures on the final material.

My 35 mm. transparencies and 2 1/4 inch films are masked by contact. I eliminate the source of most trouble by getting rid of the flare that is evident in all exposures from an enlarger. I then place the mask and transparency together in an "oil" carrier and proceed to make enlarged negatives with **nothing else to expose through.**
This is my procedure.
By masking with this system I am not forced to use a point light source. I can still use condensers and end up with a very smooth, accurate, and detailed separation negative.
The advantage is that my image is now a proper size so that I can eliminate grain. By pre-masking I eliminate flare.
This makes printing much easier to accomplish.

There is one fly in the ointment.
Whenever you make an enlarged image from a small original and you are using **glass** to hold the transparency and the mask in a tight fit, and also in a flat position, there is a positive danger of producing rainbow effects caused by **refraction.**
This is a common occurence and can be seen when looking into a mirror with beveled edges.
Any time light is forced to travel through glass, especially two sheets, this will occur.
In order to eliminate this annoying problem I suggest using a special "oil" carrier made by Condit. This allows you to place all of the masks and the transparency on register pins and allows you to use Silicon fluid.
This fluid will eliminate the refraction problem completely, as well as any Newton rings, light scratches and abrasions.
It's almost like magic, but it works.

The fluid that I recommend is manufactured by Dow Corning. The description is Dow Corning Silicon, # 200 Viscosity 100.
K. R. Anderson in Santa Clara, CA handles it.

Other fluids also work, but this one cleans easily and will not damage the original slide.

Another area that needs clarification is the use of split masks.
This is a simple solution to making a print with the emphasis on one or two colors.

A fall scene would be inmproved if a split mask were to be usedf, whether it be a Dye Transfer or a Cibachrome. (I simply can't get used to the new term "Ilfochrome.")

Split Mask

What does that term mean?

When making a principal mask, which happens to be the main mask for reducing contrast, how does the term "color correction" work. Actually, what happens when making a contrast mask is understandable.
If a mask is made from a transparency, using a sheet of film that has an absolutely even sensitivity to all of the colors of the spectrum, and a single white light exposure was made, then the contrast effort of the mask would work fine. No colors would be adversly affected and the contrast could be reduced without any of the colors in the original photo being increased or decreased in strength.
The only material that can accomplish this task at the present moment is the Corning Glass system called "Minute Mask".

However, in order to accomplish a professional color masking system, more than glass is required.
The advantage of using a panchromatic film for making masks is that it affords one the opportunity to add a color to the exposing system when exposing the mask thereby making it a tool for either increasing or decreasing the colored portions of the transparency, which in turn, changes the way the print will look.
For instance, if a red filter were used to expose a mask through a colorful transparency, the first thing that would happen is that all of the red areas in the transparency would be darkened because the red color would transmit though the filter and expose the masking film with more intensity. On the other hand, the blue areas would not get through the filter, making the density in those areas lighter and eventually, the portions of the transparency that contained blues, would also look lighter.

But, with today's masking techniques, playing with the color response is not a game but a serious method of making a color print more exciting to look at.

How can we use this method to improve our own color prints, whether they be Dye Transfer prints, Cibachrome prints or any other process that needs reproduction.
This system is called "split masking". However, there has been some confusion about split masking and how it works. I will now try to simplify the explanation so that it is understandable.

Red, green, blue, cyan, magenta, and yellow.
These are the colors that have been associated with color separation and color printing since the beginning of the color printing process.
The only pure colors in this set are the cyan, magenta, and yellow. All of the other colors in the spectrum can be produced with these three colors.
Think about this for a moment. All of the other colors in the rainbow can be produced with just these three colors, the cyan, magenta and yellow.
Red is actually composed of two colors. Magenta and yellow.
Green is composed of two colors. Cyan and yellow.
Blue is composed of two colors,. Cyan and magenta.
These three colors (red, green and blue) are considered "subtractive colors".
An example: if red consists of magenta and yellow, the subtractive color (cyan) is missing
If a separation negative were exposed through a red filter, the components of red, which consists of magenta and yellow, would pass

through the red filter. The portion that did not get through the filter would represent the cyan image. Therefore, the positive print would represent the cyan layer.
Green would let its two components through, (cyan and yellow), but not the magenta. The magenta would therefore be the positive component.
Blue would let the magenta and cyan components through, but not the yellow. In other words, the **components** would get through.
Now the system begins to make sense. A mask made through the red filter would allow the magenta and yellow to get through. What about the blue? doesn't it consist of two colors? (Cyan and magenta) wouldn't the magenta portion get through? yes it would. Therefore, **some** density would occur through the blue filter, also.
A green filter would let the cyan and yellow to pass through the filter. It would also allow some of the yellow in a red area to get through, but not the magenta.
So if a mask were to be made that could be controlled by making split exposures through specific filters, then a certain amount of "color correction" would take place.
The colors could either be increased or decreased in density.
This method of determining which filters to use with which principal mask, is more than a guessing game, but is far from perfect.

My Isolation masking system is the only method that I would consider using when confronted with real color correction challenges. (Volume 2, Aug. 1987)

If you would ever decide to expose Cibachrome prints via the "Tri Color" separation filter method, then split masking would be one definite way to improve the color saturation of the print.

In order to become a serious color printer, one must either have taste or develop it.
Visit different galleries and examine the works of the more colorful and exciting color photographers.
Names such as Claude Fiddler, Vern Clevenger, Joseph Holmes, Galen Rowell, Steve Solinksy, the late Elliot Porter, and Ernst Hass, just to name a few.

Some of these photographers are first class color printers that have mastered the Dye Transfer process and / or the Cibachrome process, and for the few that don't make their own prints, have them made by experts and guide them along the way.

One of my early students, Charles Cramer of Santa Clara, CA. has been successful in making prints of his own images. He has had classes in Yosemite at the famous Ansel Adams Gallery.
His Dye Transfer prints must be getting better and better, as I have been getting reports from new students about his fabulous work.
Remember, if you plan to show your work to a gallery for consideration for a show, make sure that you have a theme. This is most important.
I don't expect you to copy someone elses work, but do examine it and wonder about the composition and choice of color balance.

The digitized systems may be fine for the professional commercial photographer and the rest of the group that follows the photograohic image.

The latest digitized equipment to finally hit the market is Kodak's 35mm scanner and CD system.
This is surely a major breakthrough for the photo finisher, but is a far cry from satisfiying the needs of the fine art printer.
However, this new device being introduced by Kodak has not helped to slow down the forced retirement of Kodak employees.

Kodak had requested that those who wanted to enjoy an early retirement could sign up for such a decision.

They needed to release 3,000 people. More than 8,350 people signed up.

There are only three professional labs in Las Vegas. I know ywo of the labs fairly well. They are both getting involved with digitized equipment.
One lab just purchased the new Howteck high end drum scanner, the Sun work station, and a 4x5 film recorder.
Their aim is to make photo comps via the scanner system rather than the conventional way as they have been doing it for the past few years.
I wish them luck.
The second lab is playing a waiting game and will probably have the best system of all.

I just wonder how much work will have to past through the lab in order for the equipment to be paid for before it becomes obsolete.

The few remaing Dye Transfer labs are doing fine. The work they handle is still beautifully done and retouched and is still better than the digitized method, however it does take longer to produce a complicated strip-in.

In the Los Angeles area, the Bob DeSantis lab in North Hollywood, is one of the best in the country, as is the lab in San Franciso called Frog Prince.
In New York, one of the best labs is CVI. They work primarilly with art photographers and do a great job.

SAVING OVER-EXPOSED TRANSPARENCIES

There are times when your transparency is just too light.

I don't mean washed out, but on the verge of being too light.
There is one way to help save the shot, and that is to make a slightly diffused duplicate transparency from the original by contact and after processing, place it back over the original, and you will find that the density, contrast, and color saturation will have been improved. Make your finished product from this sandwich.
Of course, there will be a problem with scratches and dirt, so be real careful and clean when using this procedure.

RECOGNIZING EDGE FLARE AND HOW TO CORRECT FOR IT.

This is caused by a principal mask that is over exposed. Any light portion, of the original transparency will flare as it is exposed. If it happens to be against a dark area, then the flare that escapes into the dark area becomes even darker.

Edge flare is noticeable when you see a picture of a light subject (like a white hat) against a darker background (like a blue sky).
If you look closely you will notice a dark rim around the light object. This is edge flare. The smaller the original transparency, the more pronounced the effect. The system used in making the masks for the separation negatives is usually the reason why this problem occurs.
Here is what causes the problem.
The film conventionally used for making the principal mask is Kodak's Pan Masking Film. This material is made to be soft and slightly diffused.
The reason the film is made this way is interesting.
In the early days of color printing it was easier to register the mask back to the transparency because it was diffused. One of the interesting by-products of this soft diffused material was the fact that it improved the illusion of sharpness in the final print because the fine details in the shot were not masked as tightly as the large areas and even though the overall contrast was reduced, the fine detail

stayed almost intact as far as the contrast was concerned, and the image appears sharper.
But the diffusion of the masking material is what causes edge flare. The white hat will flare automatically when exposed. It is a very light area and the flare is to be expected.
This dark silver flare is converted to lighter silver when a separation negative is made. And that again converts to a darker edge when printed.
There are two ways to get rid of this effect.

1. Make enlarged negatives by **first making enlarged masks and printing through them** to make the final negatives. The edge effect is still there, but the size of the image is much larger while the size of the flare is the still about the same size as it was when made by contact.

2. **Use a different film for making the masks.**
   There is no law which states that you must use Kodak's Pan Masking Film, so why not try something else.
   I have used Super XX and Separation 1 and even Technical Pan Film. They all work and reduce the flare to almost nothing.
   The trick here is to find the proper dilution of the developer used to process the masks. Make a time gamma chart of your own that you know will work and repeat accurately.

I have used Separation # 1 (Kodak) with a dilution of 25cc of HC 110 per 2 liters of water. I was able to get accurate and repeatable results in the very low ranges of gamma.
The film has an anti halation coating which will help produce a very sharp image in the mask. The flare will be minimized or reduced to nothing .

I haven't written much lately, about the UltraStable process, mainly because I haven't had much news.
The company has a great product that needs to be expoited by some one with money and an imagination.
The only professional provider of Color Carbon prints at the moment is William Nordstom. His prints are excellent.

The fact that Bill is an expert with the use of drum scanners and also the use of output systems that can produce a dot patteren with over 400 line per inch makes him the only person that I would trust to produce a fine art print from my own original.
The equipment needed to make the prints is not expensive or hard to handle.
A sink, an ultra violet light source, a vacuum frame, a flat area for squeegeeing, and a dryer. That is it.

The problem arises when an image is scanned and then sent to a work station to be cleaned up or manipulated somewhat and then sent back to have screened negatives produced.
It is somewhere between the input and the output where problems do occur. It is called "Color Management." Does what you see on your screen match what will be sent back to you as a set of final screened separation negatives.
The answer is probably, "No."
I think, until this major problem is solved, there will be little growth in this fascinating process.
I hope I am wrong.

In the meatime, the Dye Transfer business is still viable and the Cibachrome process is stiill growing.
I have subscribers from all over the world. It is amazing.

In the meantime, if any of you have specific questions to ask me, do not hesitiate. I welcome the oportunity to share some of knowledge with you.

Bob Pace
2823 Amaryllis Ct.
Green Valley, NV 89014