

KEEPING PACE

A Monthly Newsletter Devoted to the art of Darkroom Photography

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Dye Transfer--Still a Great Process

Back to basics

Making separation negatives by contact or by enlargement requires that specific aim points are met.

Point # 1. The three curve shapes should have the same degree of incline and match each other as closely as possible for density.

Point # 2. The color filters must be the appropriate kind used in separation systems, The Red 29, Green 61 and the Blue 47b.

These three filters do successfully separate the three layers of color and with a little adjustment, can produce color prints that are very accurate.

Point # 3. The level of density must be placed in the straight line area of the curve shape of the separation negative film.

If this important point is not adhered to, the negatives, even though they match each other, may be placed too high or too low on the straight line portion, thereby losing much needed detail information at either end of the scale.

What kind of film do I recommend for use in making separation negatives? I have only two personal choices. Super XX or T-Max films manufactured by Kodak. Other films have been used for generations by other printers and lithographers. For years, Dupont, Agfa, and Ilford have made excellent films for separation purposes. Now Fuji has also entered the market place. More important than the kind of film to use, is the total understanding about how the separation process works.

Some people like T-Max film because of the finer grain that it affords, and this is true. It is a sharper film.

The sensitivity of the films must be kept in mind.

Super XX has a very close color sensitivity and is one of the reasons that I have used it for years. The grain of the film never bothered me because most of my work was made from enlarged separations. The grain of the negative material was rarely enlarged more than 200%.

The kind of developer to use is not critical, but in my suggestions I always recommend using what the manufacturers have used for their products.

Most books about making separation negatives are quite accurate, but neglect to tell you that all originals are different and may require

a different approach than a previous one.

For instance:

Kodaks E-80 manual, which was used by many lab technicians was eventually discovered to be full of errors.

Instead of giving the reader the exposure and the development times based on their research in Rochester, they should have told you **why** a 25% mask was needed to make a set of negatives. Why not 20% or 30%? The reader was given exposure and development times that would never work for an individual at home in his own darkroom.

My last newsletter described the different stages one must go through in order to "learn" how this process works.

Stage one is simply learning the physical handling of the material and the steps that are required.

Step two is learning how to apply the mathematics needed to make negatives and matrices that make sense.

Step three is where we separate the men from the boys and learn how to implement the various technical procedures that can make a good print, a really great print.

Another point that we found wrong with some publications is the statement "High-

light negatives are not usually needed except where special effects are desired."

Highlight negatives, (three of them) are required for 99.99% of the time because of the fault of the separation negative films, and the further fault of the matrix film.

The curve shapes are real curves and distort the information we are trying to capture on film.

Straight line reproduction is only found in today's scanners. This is one reason for the great success that the new digitized systems are enjoying right now.

Contrast control masks are made to reduce the overall contrast of the original transparency. The understanding of what happens to the original transparency after the highlights in the original have been masked until they display none of the detail. If you have already "flattened" the highlight structure, there is now way to retrieve it when making the separations.

Highlight masks will help to some degree, but it is better to keep some of the information in the negatives.

Making a set of negatives with little or no detail in the highlight areas is a mistake.

The first thing the eye sees is the sparkle in a print. Remove the sparkle and the

print dies.

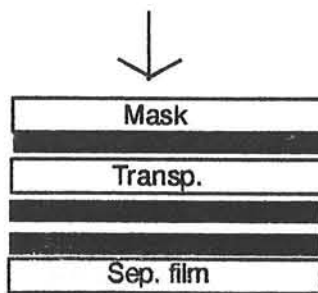
It all boils down to understanding how the method must be applied.

The separation process must be taken apart and examined and questioned constantly.

Alignment problems that are rarely discussed.

In what position are the films placed when making masks?

It depends on "how" they are to be used when making the final set of negatives.



The above alignment is the correct position of all the films when making separation exposures with the light source from above.

If you plan to make separation negatives with the light source from below, turn the drawing upside down.

The negative carrier in the enlarger is usually the first place to examine how the films should be aligned.



The separation negative is below the Highlight mask. Both are emulsion up.

Work backwards to find the correct position of the masks and of the separation negatives.

It is very importance to use reverse pin positions in the register glass.

The masking films must be able to mask the original without showing edges, or interrupting the accuracy of the final separation contact, which must be emulsion to emulsion.

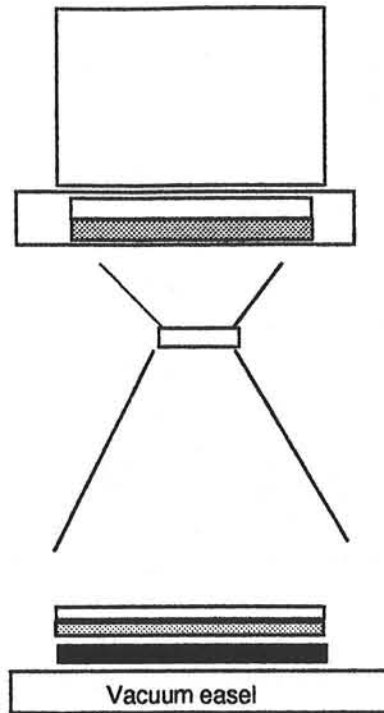
If you make enlarged separations, the importance of positioning the elements is even more critical.

There are two schools of thought about how to make masks for the enlarged separation process.

The first is to place the original transparency in the separation enlarger, emulsion down, and project the image on a gasket easel, to the size required for the separation negatives. Let us assume that 8x10 is the size of the final separation negatives.

At this stage, a dummy sheet of film is placed on the vacuum easel, and a fresh sheet of Pan Masking film is placed over it, on register pins, also with the emulsion down.

Accuracy is the key to making this method work.



The transparency in the enlarger is placed emulsion down.

The pan masking film is placed over a dummy sheet. Mathematical conclusions result in a set of exposure and development numbers. The masks are exposed and developed, washed and dried.

The dummy sheet is removed. A fresh sheet of separation negative film is placed on the same easel, emulsion up, the masks are placed, one at a time, in the same original position on the same easel.

The correct separation exposure is made through the correct separation filter and the the mask onto the sheet of separation film, which is then processed.

This, of course, is done with all three of the colors required.

The allegation here is that the mask is full size and the flare that accompanies this Pan Masking film will do little damage to the information in the separation film.

The carrier is not disturbed during this whole procedure, thereby making registration a simple matter.

In fact, a point light source can be used in order to produce extremely sharp negatives. So sharp, in fact, that an oil carrier is used to eliminate any abrasions or scratches, as well as refraction problems that occur when exposing anything through glass, especially 35mm films.

Well, I was never satisfied with this approach. I used it for more than 20 years and had felt that something was wrong.

It was the failure to eliminate the flare caused by the light areas of the transparency when the image was being exposed.

This flare did more damage than one could conceive. Highlights in the original transparency would be so bright that a normal black darkroom would suddenly be illuminated so that it was possible to see details of the room.

I usually say "you could read a newspaper."

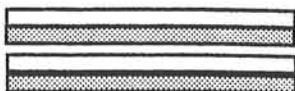
I was making Cibachrome prints and realized that masking was the method to use in order to reduce the overall contrast of the transparency before making any exposures on paper.

Would this method work when making separations?

The first consideration is this;

Would I be able to make contact masks that could be placed back to the original transparency with absolute accuracy and without flare? I experimented with various kinds of punching systems and finally settled on a system that allowed me to place the small original into a larger sheet, and punch the larger sheet. This gave me a safety net

To make masks for Ciba meant that the following alignment would be for the placing of the masks, both before making the masks and when making the exposure onto Cibachrome material.

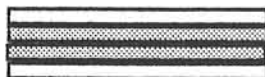


With the light coming from below, expose the mask and process it.

Then place both the mask and transparency in the same alignment in the carrier and with the light coming from above, make a Cibachrome print. or a set

of separation negatives.

To make a set of contact masks for the Dye Transfer process, it might be advisable to make the masks emulsion to emulsion in order to reduce any edge effects, and to make sure that the final negatives are placed into the carrier emulsion down.



When placed in this position, the emulsions will be in contact and should exhibit no edge effects. Make a set of enlarged separations from this position. The negatives will be reading right when they are emulsion down.

In any event, the fact is, that it is not only possible but highly advantageous to make enlarged separation negatives as I have just advised.

What about the idea of making separation negatives enlarged to the size of the print?

Use the same positioning as just described.

Remember, in order to make negatives that face the matrix film in the proper order, the placement of the masks and transparency in the enlarger must be in the just described position.

What kind of film should be used? I would prefer

Kodak's Super XX but it doesn't come in this size. The next choice is Kodak's Separation # 1 or # 2.

#1 is designed to be used when making separations from transparencies and # 2 is designed to be used when making separations from art work.

Either film will work. Check out different films produced by different manufacturers Use smaller sheets of any of these films until you establish a set of aim points for accurate exposure and development.

Then, when making the large sized films, process them one at a time to insure smoothness of development. When making the smaller tests, keep in mind the agitation rate required by the large sheet and try to emulate it.

Highlight masks could be made in either of two ways. First, they could be built into the contrast mask by first making the highlight masks, then adding them back to the transparency before exposing the mask material, one at a time. They will then be incorporated into the masks.

Or second, you can purchase large sheets of Fuji 100 or Agfa's P-911 (panchromatic litho films) and add these films, one at a time, to the proper negative

when making matrix exposures.

I would rather use the second version so that perfect control of the highlight area could be maintained, even though the cost would be higher.

A simple vacuum frame and pump can be purchased from a "used lab equipment" company. There are many throughout the states. Register pins and a film punch can also be purchased from the same sources.

A magazine called **Horse Trader** is printed in Santa Anna, Ca. and has many of these items listed for sale.

The light source could be a simple 20 volt point source, placed high up near the ceiling. This kind of unit is simple to build, or you can purchase a K&M system from any reputable graphic arts dealer. The distance should be over 6 feet away from the films surface. Small tests could be made and repeated with complete accuracy to a larger size.

Can the screened separation negatives that can be produced by any competent scanner house be used to make Dye Transfer prints as easily as Carbon prints? What about the possibility of purchasing a set of screened separation negatives from a local separation house? Would they work in a similar fashion that the

UltraStable Carbon process works?

Yes they would.

They can even put your image through a work station and make any adjustments you want.

The black printer could be made by adding different amounts of the 3 matrix dyes together. Or a black dye could be obtained from any dye company.

In fact, the advantage of making a set of matrices in this way is that all of the table corrections that are associated with the Dye Transfer process can still be used. And you won't even need an enlarger.

Try it on a small scale such as 8x10. Then try it on a larger scale, until you are satisfied that the company making the screened separations is doing a competent job.

Will this kind of endeavor match what is being done by Bill Nordstrom? I doubt it. Bills techniques will be top notch quality with great detail, and I doubt if any local company will ever be a threat to him. His screen size will also be much finer than anything else that could be purchased locally.

This is just an opportunity to get involved in the same kind of effort without going all the way to Carbon materials.

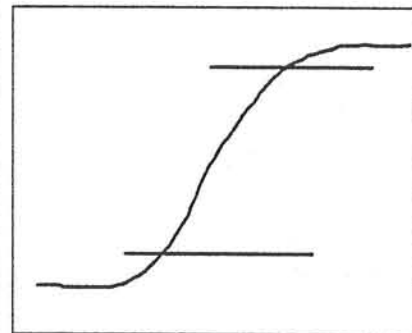
While you are at it, purchase some material from Charles Berger and make a few

prints via the UltraStable process process. Besides the vacuum frame, all you will need is the Light source. Again, you will find items like this in the "Horse Trader."

The importance of the understanding of "Average Density."

Why it is important to place the image on the best portion of the curve.

Every sheet of film, especially separation negative film, has a decided curve shape.



If you inadvertently over or under expose the image, it will be placed on the wrong portion of the curve shape. The exposure is critical.

Every original transparency is different and will require a different set of exposures in order to be placed on the proper portion of the curve shape.

How is this calculated?

I call it "Average Density."

We make our charts using a three step grey scale.

In essence, this scale is a transparency.

All of our exposure and development times were derived from using this three step grey scale.

But it is only a three step grey scale. It will never change density of density range. **Never.**

However, every transparency you own or shoot will have an overall density, and a density range of it's own, and you must make adjustments in separation negative exposures in order to place it at the best place on the separation negative film's straight line portion of the curve shape.

If you do not make the adjustments, you will occasionally find that the highlights are blocked up, or the shadows will exhibit little or no detail.

The methodology is simple. You will need a densitometer.

Average density can be determined by adding the high density to the low density, then dividing the answer by 2 and there is your "average density."

Using a simple TI-30 calculator, you can determine the exact amount of difference in exposure times down to a fraction of a second.

For instance:

If your normal exposure (determined from the chart) is 10 seconds, but you have a different average density

of + .30 the calculator will tell you to double the exposure. If it is -.30 it will tell you to cut the exposure in half.

Here is an explanation of how to use the calculator.

To increase an exposure by a .10 difference in Average Density,

First enter .10 then press inv (or 2nd) then press LOG then press the X button, then press the old exposure of 10 seconds, then press the = button and the answer will be indicated (12.589254) or 12.6.

The reverse procedure for reducing an exposure by .10, simply do this:

first enter the difference .10 then press inv or 2nd then press log, then press 1/x then press the X button then press the = button and the answer is, 7.9432824, or 7.9.

Try it.

This learning exercise will enable you to place your image within the safety zone of the straight line area of the films curve shape. The accuracy is measured in decimal points.

How to make contact or enlarged separation negatives that fit the contrast range of your enlarger, and how your eyes and your imagination are the most

important meter ever developed.

Sometimes, it is almost impossible to determine a density range because of the subject matter.

Your eyes can be used to establish a "kind" of image you are presented with.

Let us assume that a normal mask is somewhere around 25% You could make a chart that describes your transparency in terms that anyone can determine.

As follows: If the originals fall into these categories,

- 40% for very contrasty
- 35% for contrasty
- 30% for slightly contrasty
- 25% for normal contrast
- 20% for slightly soft
- 15% for soft
- 10% for very soft

This kind of determination can be used without a densitometer, and is the only time I would recommend it.

What are the advantages of making large separation negatives for producing Dye Transfer prints of the same size?

The main advantage is that the image deterioration will be held only to the making of the negatives and not to the making of the matrices.

The flare problem that is inherent in every process of making enlarged images is not applicable when working by contact.

Once the transparency has

been enlarged, the shadow details will be intact as flare does not occur in dark areas.

Then, when the negative is exposed to make a positive image, if contact systems are employed, the flare is still nonexistent.

Try this system just once and you will see what I mean.

What are the disadvantages?

The production of large negatives requires absolute accuracy in the processing steps, namely, **agitation**.

It is much simpler to make separations to a small size that will fit into your tray. The agitation rate will be easy to comply with, however when a large sheet of film is processed, the rate of agitation will have to be modified. The reward is in seeing the difference in the print. You will think the separations were made with a scanner.

Have you ever wondered about the problems you will encounter when trying to dodge and burn areas in the Dye Transfer process? Since three exposures must be made to complete the set, dodging and burning on all three matrices accurately is an impossibility.

Unless,

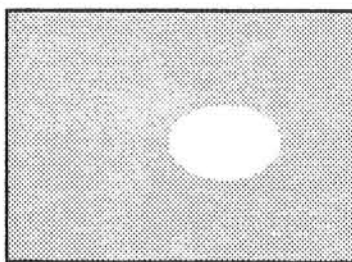
Here is a system that I used

during my business days.

Using a small enlarger, I could produce a mask that could be used for burning in areas.

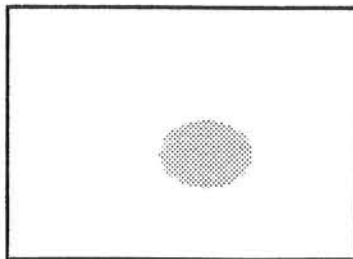
I would place a sheet of unexposed film on an easel and I would use a dodging tool and make a short exposure using white light. The dodging tool was placed over the area in question and while moving it, I would make the exposure.

I would process the film in a very dilute version of developer.



I could use a pin system and place the mask over the area that needs the burn in. This dodge could be placed anywhere on a sheet of film.

The opposite could also be done by burning in a sheet of film,



This sheet of film could be used to lighten an area.

The well known color printer

and critic for major photography magazines, Ctein, has a unique system for dodging and burning areas that could not otherwise be exposed accurately on all three sheets. .

Ctein's system of dodging and burning with the Pan Matrix Dye Transfer system is really smooth.

He will produce masks of different densities so that precise densities can be held back or burned in with accuracy. If he needs to burn in for one full stop, the density of that mask is .3. When it is used, a full stop is added to the exposure while the hold back mask is in place. The result is that a perfectly smooth edge is repeated three times in the exact place on a set of matrices and the area that had to be burned in is burned in exactly one full stop.

By making many masks at different levels of density and with different configurations, he could stack various masks and tape them to his negative carrier and have a very accurately corrected print.

His method is to make a C print first to establish the amount of masking required to do a good burn or hold out. Once this has been established, he makes his matrices with the same masks.

Accurate burns or dodges can be made repeatedly.

For years I have been touting the marvelous easel meter designed and manufactured by Wallace Fisher Co. Much to my disappointment, they have discontinued making it.

They claim "insufficient sales" as the reason.

However, bad news is usually followed by good news. Jobo has come to the rescue.

A new meter called the Multitronic is now available. It is an exposure meter, an enlarger timer, a reference densitometer, and a process timer combined into one easy-to-use, compact unit. It can take exposure readings either on the easel or at the lens and can average nine different readings and will also determine the different contrast grades for black and white paper from grades 0 through 5.

The best function that would suit my purpose is its use as a meter to take Density readings from 0.1 to 4.0 in 0.01 increments on the easel. While its range is not as large as the Wallace Fisher meter, it does cover the area we need.

It also has built in, three process timer channels with nine steps per program. Try processing E-6 in a simple rotary Jobo without it.

The Model no. is Multitronic, #6220 and sells for \$495. (suggested.)

This means that it should be able to be purchased for about the same price as the Wallace Fisher.

The Peterson Color Match system depends greatly on the use of such a meter. It must have readings that can be matched with ease.

I have been in communication with **Rene Pauli, of San Francisco**. He is considered one of the best Carbro printers in the country.

Unlike the UltraStable process, or the new Evercolor process, he produces his own proprietary pigments in his kitchen, and sensitizes them with his own formulas. He makes enlarged separation negatives using a 4x5 enlarger and is very familiar with this stage. He was a former Dye Transfer technician with Glen Peterson, in New York City.

His prints are made with no need for screened negatives or a scanner.

The quality of his prints are superb. The degree of the third dimensional effect is outstanding. Only three colors are required, and the resultant blacks have a deep rich sheen which offsets the flatter highlights.

He is not in the business of making prints for anyone else but himself.

Most people think that it requires much space and equipment to achieve this kind of quality.

Rene mixes his pigment formulas, and coats the plastic sheets, processes the 16x20 separation negatives and all of the other masks, and combines the final prints in one room. His Kitchen.

How much does it cost for the equipment?

Except for the enlarger and the lens, registration equipment for the making of the separations and trays, not a great deal.

Vacuum frames can be purchased, used, from as little as \$500. This includes the pump.

The light source that Rene uses is a surplus ultra violet street lamp, which he has modified with a timer and an integrator, which he has designed and built himself.

I am not sure of the camera, but I do know that it is a 4x5 view camera. The details he captures are fully detailed in the prints he produces.

He sent me some samples of the curve shapes he is able to achieve with his meticulous darkroom skills and his straight line area looks very impressive.

I look forward to seeing more of his work.

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