KEEPING PACE

A Monthly Newsletter Devoted to the Darkroom Arts

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Grey Scales-- How are They Best Used?

Grey scales. Do they work? They sure do.

There has been some misunderstanding about what part of the separation negative system the grey scale plays.

If all you ever had to do was expose the three step grey scale through the three separation color filters and learn how to process the three sheets to the proper contrast that fits your enlarger, life would be so simple.

The times for exposure and developing would always be the same.

This, incidentally, was exactly the procedure that Kodak proposed in their pamphlet known as E-80., the Dye Transfer "bible" that was used by many, including me, until it's faults were discovered and subsequently overcome.

Remember, the grey scale is a fixed thing that does not vary in overall density or density range. However, the transparency is another story. Transparencies have a life of their own and rarely, if ever, match the range and density of the three step grey scale. The very rare questions I receive from time to time regarding the three step grey scale make me wonder if I had taught the method properly. Let me elaborate a bit and give you a simpler explanation.

We use the three step grey scale to determine the correct exposure and developing times for a specific and accurate gamma. From these tests we can make a chart that will allow us to find the correct exposure and developing times for any strange original transparency.

Now, along comes a new transparency. It has more density than the grey scale, which means that in order for the image in the transparency to be properly exposed, an increase in exposure is necessary. How much? This is the reason for making a time gamma chart. The transparency will also has a different degree of contrast compared to the three step grey scale.

Again, you must refer to the time gamma chart.

This means that a different degree of gamma must be found so that the image has a reliable density range and the correct exposure so that the image fits on the correct area of the straight line curve.

Read this last sentence again.

Make sure that you understand it. The image is the most important thing to worry about, but the grey scale has the information that tells you when the contrast between the three sheets is comparable. The grey scale is only used for

comparison, nothing else.
If you do your work correctly, you will find that the grey scale moves up and down as does it's contrast. Remember, only the image is important.
Since the grey scale is a neutral image, it can be relied on to show it's accuracy, whereas, the transparency may have a decided color cast in the shadows or highlights and would not be a reliable place to take comparison readings.
I hope this explanation is understandable. I hate to see any of you on the wrong track. If you are making Dye Transfer prints, the production of black and white paper prints (known as bromides) will give you a good reading in the grey areas of the image or the grey scale.. Your prints will begin to have a life of their own.
Remember, if you make paper prints, (bromides) you can balance the image to a decided neutral, or tweak the balance a bit and make the print even better than it would have been if not corrected.

Being able to place a color of your choice into an area in Type C, Cibachrome or Dye Transfer.
Have you ever had the occasion where you would like to add some color to a portion of your print in order to stimulate the viewers senses? Suppose you wanted a rose in a specific flower bed to stand out by itself and be noticed, and all it needed was to introduce a different color to it, could you be able to accomplish this seemingly difficult task? Actually it is a simple process.
The task has 2 separate procedures. The first task is to be able to isolate the area that you have in mind for the color transformation. The second task is to be able to find the correct filtration or filter to be used in order to make the transition.

Let us take the first procedure.
Isolating the area can be accomplished in a number of ways. The obvious method would be to cut a frisket using Rubylith film (a peel able red membrane that acts as a hold back mask) and when this is done, an exposure to a lithe film (either negative or positive) is all that is needed so that a solid black is used rather than the red color of the Rubylith film,so that any additional exposure could be used to change the color by using a filter or a filter pack.

If you want a more accurate and sophisticated approach to making an isolation mask, use a color sensitive pan litho film such as film provided by Fuji (Fuji 100 or Agfa's P-911 panchromatic litho film) an exposure could be made using a filter of the opposite color in order to isolate the area in question.
An example:
If you wanted to isolate a red rose, use a green filter to make the mask. The red rose will appear clear on the litho film while all else (especially if it is a cool color) will end up with density.
How does one choose the color for the exposure? This is a simple method. If you are making a Ciba print, here is a procedure

If you have some colored gelatin films, pick any one of the colors you would like to use.
Cut and tape an 11 step grey scale into a sheet of opaque material and lay it on the easel
Place the colored gel under the lens (or in the filter drawer) set the lens at *f* 11 and make an exposure of **10 seconds** through the 11 step grey scale.
Record the light level (with the filter in place) and then, using the same easel meter, set the light level so that the meter is at zero.
Then place the 11 step grey scale over the meter's probe and read the density of each step.
Then all you need to do is use some simple mathematics.
Here is the procedure.
Next to the colors on the sheet of paper, write the density of the grey scale step.

This is a complicated as it

After your initial exposure on your Cibachrome paper, cover the easel with a large box so that the paper will be protected from any other exposure, place the color filter in place (under the lens or in the filter drawer) Place the meter's probe on the box, activate the light source and adjust the lens *f* stop until the meter reading is what you are looking for. Close the light source, remove the safety box, place the frisket or mask on the easel and make the exposure. (**in this case 10 seconds**)
That is all there is to making a change in color or density of a specific area.
Could this procedure be used to make a good print great, yes it can. Remember, adding color exposure to a Cibachrome print will also lighten the print. If this is not your objective, then it may be wise to first hold back some exposure from the area in question before adding more exposure to change the color.

If you are making a Dye Transfer print, the procedure is somewhat different. The method to make the frisket (the mask) is about the same, but the addition of color is made by adding a certain amount of exposure to the proper matrix. This is not as simple as adding color to the Cibachrome print.
When adding exposure to the matrix film, the area will become darker, not lighter. If you want to to make a lighter color, then the removing of a color is done by using a hold back frisket on one or two of the matrices in order to make the color of your choice. In this case i recommend using black and white prints as a guide to making the correct color exposures. Here is how:
Using a painters palette or a Pantone book, find the color you want to capture. Then using white light only in the enlarger, make a series of step and repeat exposures on black and white photographic paper so that a series of grays will be exposed. Using separation filters (red 29-Green 61 - and 47 Blue) examine the color swatch and the grey exposures through each color at the same time and find the density that closely matches the color swatch. When you find a close match, discern what the exposure is and find the relationship between all three exposures.
These exposures must be calibrated to the matrix film speed to be effective. Here is how this chore is done.
Make a few different exposures of the 11 step grey scale onto a sheet of matrix film. Process it normally and after it is dried, soak it in a Cyan dye bath for 5 minutes then rinse it twice in a 1% acetic acid bath and transfer it to a prepared sheet of dye transfer paper. After a few minutes, peel off the matrix. Then examine the different cyan grey scales and the black and white grey scales through a red (29) filter. Find which one is a close match to the other. What were their exposures? Use your math skills and determine the difference between the two and come up with a factor.
An example:
If the cyan matrix scale at 15 seconds looks like a good match to the black and white 7 1/2 seconds exposure the factor for the matrix is 2. So once you determine the correct exposure for the black and white print, multiply the exposure by 2 for the correct exposure for the matrix film.

But, how about making color corrections using a Type C system?
The same procedure for the frisket (mask) works here too, but the colors can only be darkened by the addition of color exposures, unless the area in question is first held back so that it is lighter to begin with.
In this case, the choosing of a color is a little different. Choose a filter pack that you think will work and also expose it through an 11 step grey scale.

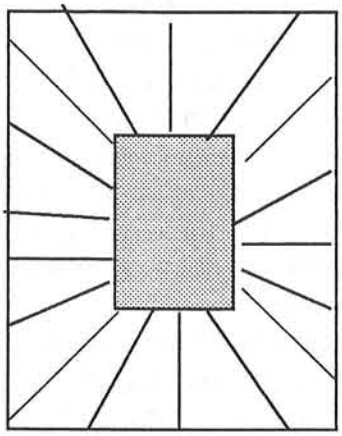
As in the first Cibachrome color correction system, read the different levels of

intensity with the use of an easel meter such as the new one that is sold by ZBE and when you are ready to make your new exposure, you will have already chosen the color pack, and all that is left is to determine is the level of density by adjusting the *f* stop and making the exposure.
Does all this seem important to you? If you want to make color improvements by being creative, I would say it should be important.

Have you ever exposed a image using a vacuum easel.?
If you have, then you must be aware that sometimes the vacuum doesn't grab the film or paper quite tight enough.

Making a vacuum easel work properly.
There all all kinds of vacuum easels. The most common are the paper easels that can hold large sheets of paper (or film) in place so that the paper or film can be removed and replaced again into perfect position, time after time. This is a must.

If a small original is mounted into a larger sheet of film, in order to make a contact exposure, how easy is it to achieve perfect vacuum? There are a few tricks here that most printers are unaware of.
If a 4x5 sheet is placed into an 8x10 sheet of film for masking or separation or whatever, simply use a sharp blade and score the film in the following manner.

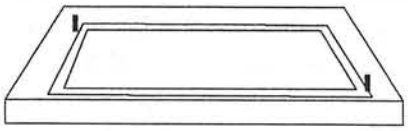


The vacuum action starts at the outside edge of the film. The scored channels will allow the vacuum to work right up to the edge of the smaller sheet of film.

If you use a diagonal pin system then you must first place a flat piece of board over the entire sheet before engaging the vacuum. This will prevent the vacuum from grabbing the image before it is entirely sucked down tight. Another method for getting great vacuum without going to the poor house is a cheap man's system. For a great vacuum place your film or paper on the easel and have a large sheet of polyester film taped to the other end, away from the pins and just float it down into position to cover the entire board, except where the pins are located then you start the vacuum motor. The large sheet will be pulled down very tight and make for great overall contact. But the sheet must be absolutely clean.

A multiple film vacuum easel. Why is it necessary?

If you are going to make a separation negative or an internegative using a vacuum easel with an enlarger, then two sheets of film must be pulled down tightly. The trick here is to have two channels to act as separate vacuum channels. The inner channel pulls down the first sheet, and the second channel is situated just outside the first sheet so that a gasket can be utilized to suck down over the edge of the second sheet.



A double vacuum line

In this case, you must use a stiff board that just fits into the open space inside the vacuum cover This board is first placed into position and pressed down hard before activating the vacuum. This easel is also an important part of the tools required for producing "photo comp" images.

Most beginners in the field of darkroom photography are unaware of the hundreds of "tricks" that can be accomplished with the right tools

plished with the right tools and the knowledge of how to use them.
An easy solution to place more than one sheet of material on an easel and wish to have a complete and tight fitting assemble, is to use an easel without channels but with thousands of little holes throughout it's surface . Place the film elements on a set of register pins on at a time, in the correct order, then place a sheet of larger clear film over the entire easel including making holes to include the register pins and when the vacuum is activated, the entire assembly will be pulled down. The only caution is to make sure that all of the elements are as clean as possible. Just count the total amount of sheets involved and multiply that number by 2 to get the amount of surfaces that you must make sure are clean.

If you make prints or negatives by placing in the carrier the original transparency, plus any contrast masks or silhouetting masks, and are forced to use two sheets of glass to keep all of the elements together, the following problems can (and will) occur. Refraction. The one phenomon that distorts the image because of the fact that 2 sheets of glass will disturb the path of light. The next time you are looking at a mirror with a beveled edge, notice the rainbow effect that occurs along the edge of the glass. **This is refraction.**
What happens with the image in our case, is that as the eye travels towards the outside edge in the shot, the "rainbow " effect takes place. Then there are many surfaces to contend with. The probability of getting an unsharp image as a result of all of the sheets of film, plus the 2 sheets of glass is very high.
One solution is the use of silicon "oil" which eliminates the refraction and allows for a better transmission of the image. However, some of my readers are skeptical about the use of any "oil" and the difficulty of cleansing the original.
A great solution is the use a vacuum carrier.
A vacuum carrier. Is it possible to make one?

An upside vacuum carrier that allows the elimmination of the bottom glass

It is a simple matter to either build your own or have an outfit such as Condit Mfg. produce one for you. How does it work? Actually, it is a great idea that I first witnessed when one of my competitors used it.
He made a 30x40 image from a 35mm transparency. It was a shot of a young lady in a bathing suit. This attracted much attention. But I was more attracted to the actual print. The detail was fabulous. The grain was at a minimum and the soft edge of the girls skin was perfect. Of course, I asked him about it. I thought that he would reply with "get lost" but he was and still is a gentleman. He was free with his information and divulged his "secret." The first thing he did was to mount the 35mm original into a larger sheet of film (which I also do, 4x5) then he proceeded to make a contrast reducing mask. (Again, which also do) He didn't follow my specific method of determining the gamma of the mask, but nevertheless, he made a contrast reducing mask. Here is where he differed from my "system." Instead of using Kodak's Pan Masking film, (which sometimes produces a edge effect on some images if the mask is over exposed) he used Kodak's Separation #1.
This film is used to make separation negatives and is virtually a much higher contrast material than Kodak;s Pan Masking film. He had to modify his developer so that he could make a mask in the 25% range with accuracy. The film is as

sharp as it can be. There is no edge effect produced by this film. This meant that his registration had to be perfect. I mean **Perfect.**
Then he showed me his registration carrier. It was simple device that he constructed. It allowed him to make his image with no bottom glass in the carrier. This meant that the last thing the enlarging lens would see would be the fine grain and emulsion of the original Kodachrome film. Simplicity. The results were great. By using this method, he didn't have to worry about point light sources. Since he wanted to make sure that he had a smooth effect, he used a diffusion lighting system in his enlarger. Here again, he modified his enlarger. The light source was a very bright (and hot) halogen bulb. He diffused the light with diffusion filters, and then aimed a strong blast of cool air across the film plane to keep his image from buckling under the heat. It worked.
If you have the hands and the tools, try this kind of carrier. You won't have to modify the film type because the Pan Masking film works fine, so long as the exposure of the film is kept in check, and the speed of the bulb will be sufficient for printing Cibachrome prints if a 250 watt (#213) is used.
I tried this method using my antiquated Omega D2 and the results were fine. Incidentally, if you can find an old Omega D2 anywhere, buy it. The results that you can get from this "tool" are great. I defy anyone to be able to tell the difference in examining prints between this old piece of metal and any of the new instruments.

The new Dye Transfer process is about to be announced by Dr. Patterson.

All of the heretofore problems of getting Kodak to relinquish their formulas for the matrix film, the dyes and the receiver paper are solved. As you read this newsletter, Dr. Patterson is having a 100 ft. run of matrix film being prepared by the coating company and will shortly be sending sending some film out to specific labs so that the material can be double checked by them. He will also be sending out his questionares about the formation of a new organization called the "Dye Transfer Association." It took almost 2 years to get this dilemma solved. Thanks to Dr. Jay Patterson, we are just about there.

Incidentally, some equipment and materials are to be found for sale by those who are interested in getting out of the Dye Transfer business.
If you need some material or equipment, call:

Bob DeSantis at 818-886-6598. He has paper, film and dyes for sale as well as some of the finest equipment to be found anywhere.

Jeremy Harris also has some Dye Transfer supplies for sale. He can be reached at 301-929-8621.

For those of you who may still have supplies but have run out of the developers and the fix, here are some formulas.

To make 1 gallon of part A of the matrix developer:

Elon	16 grams
Sodium Sulfite	8 grams
Pot. Bromide	16 grams
Pyro	18 grams
Citric Acid	4 grams

Mix them in the order shown (@ 100°) until all is dissolved Use this developer at 68° to 70°.

The B portion of the matrix developer is simply 9/12 pounds of Potassium Carbonate to one gallon of water.Add this chemical slowly to the hot (100°) water and dissolve.
Use the chemistry at 1 part A to 2 parts B . for normal use. Changing the proportions will change the degree of contrast.

The fixer is simply one scoop (1 quart container) of hypo crystals to one gallon of hot water.

Add to this a small capful of Potassium metabisulfite. This will help prolong the life of the fixer.

I have mentioned the great easel meter manufactured by Wallace Fisher for many years. Unfortunately the company has decided to quit producing this great meter. I don't know why.

However, the void has been filled by ZBE. The have produced a new easel meter that needs no voltage regulator or wires of any kind. It is called "A Density Reader." and it does just what it's name implies. It reads densities right on the easel. Most lab technicians are consumed by the fact that they have been told that an analyzer is a necessary piece of equipment. This is not particularly true. It is a good thing to have if you are printing color negatives and need to find the color balance for a flesh tone by comparing it to a pretested exposure. But for those of you who need to make Cibachrome prints or Dye Transfer prints, an easel meter is the real answer.

Here is why.
If you make a test print and the density is off, you can calculate the difference by eye. If you change filtration, you can also make the decisions by eye. However, any change you make to the filtration will cause a difference in the final print because the filtration will affect the density. If you want to make a change in density and decide on a 25% increase in exposure and have already made a filter change, you are in trouble unless you know what the easel light source density was in the first place.

A great feature of this new meter is the fact that the center of the probe , even when the meter is placed to one side of the easel, allows one to see the light source hitting the probe hole with accuracy . No problem with alignment of the light source.

A great idea was suggested to me by Tony Frascello of Phoenix, AZ. He is taking a class for "PhotoShop #3" at the local university. After a month or more of this concentrated learning, he plans to purchase a computer, have a local company scan his transparency and place it on a removable disc, so that he can place it in his computer and play with it until he can produce the corrections that he deems are necessary. At this point, he will return to the same litho company that scanned his original image and produce a set of 3 color separation negatives at about 250 lines of resolution.

This procedure, so far is not very costly. The next step is to purchase a simple vacuum frame and an overhead light source with a simple incandescent bulb, and a timer with which he will expose matrix films and produce Dye Transfer prints. He can use black and white prints to determine the balance, and when he has his factor difference between the paper and the matrix film, he can produce top quality color prints.

He has tested the output. The screened negatives will be as sharp as needed, but the fact that the dyes do bleed will allow the screen to disappear completely. This will give him the best of both worlds. The straight line reproduction of his original with no **flare whatsoever,** and the depth and beauty of a dye transfer print.

Imagine this, No flare, and still have the opportunity to use some of the controls that made the Dye Transfer process so exciting and valuable.

The Dye Transfer process is not dead at all. In fact, as you are reading this newsletter, Dr. Patterson is having a test run of 100ft of matrix film produced. Once this material has been tested by the good Dr. Patterson, he will distribute some to the

labs that he is using for testing. I don't know exactly when the questionnaires will be sent out, so just be patient.

I am excited about this new event to take place. Many of you have bemoaned the fact that I have discussed the digitized systems. I had to. To dismiss the new wave as a problem that will go away by itself would not be truthful with my readers.

When photography was invented in 1838, many artists felt that their livelyhood was to be changed forever, and that photography would eventually displace the artist and his paint brush.
Have you visited galleries lately? The amount of paintings hasn't gone down, but on the contrary, other forms of art have joined the fray. This includes photography in black and white and in color.

Art is art. I don't care what method you use to convey an idea. However, I do hope that it is a photographic effort.

Have you ever wanted to make your own screened black and white negatives aned didn't think you were capable of doing so. The production of a screen image is quite simple. Do you need a camera?

No. Not really. I have used my simple enlarger as a camera with very little difficulty. Suppose you want to make a negative about 3x4 inches in size, and you have favorite protrait of your loved one to copy. **Here is how.** Using a sheet of clear film, and a Rapidograph pen draw a rectangle measuring 3" x 4". Place this in your enlargers carrier and project it down to the easel.

Now, place the picture that you want to use on the easel and with dim room lights, enlarge or reduce the projected rectangle until it covers the area in question. Use a magnifier to make sure that the projected rectangle is as sharp as it can be made. Then, remove the rectangle from the carrier, shut off all of the lights (except for a red safelight) and relace the rectanfle with a sheet of unexposed Kodak Litho film (Kodalith Type 3)
Stop the lens down to *f* 11 and then, placing lights on each side of the easel, turn on the lights for approximantly 5 seconds. Then. using Kodalith developer, (type A and B) process the film for 2:15 @ 68°. Examinre the results. If the shadows look weak, but the rest of the image looks fine, then re-expose the image and also give it a flash exposure by opening the carier and exposing the litjo film in a very dim light source for 1 or 2 seconds. This flash exposure is a very dim light source but has the effect of gaining some density in the shadow portions of the image. Flashing, in essence, is a control method of reducing overall contrast. Being able to make your own screened prints or negatives will allow you to produce your own newsletters or other publications with photographic reproductions that look and are professional.

Incidentally, for those of you who are contemplating renewing your subscription to this newsletter, a free book "The Art of Photo Composition" will be offered as a gift.
Just my way of saying thanks to my many friends, students and readers, who have supported me for the past years.

Don't forget to ask the former lab owners about their willingness to sell out their hard earned supplies and equipment.

Thank you,

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