

# KEEPING PACE

A Monthly Newsletter Devoted to the Darkroom Arts

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## Conventional Systems are Here to Stay

### **Conventional systems are still alive and well.**

The world of computers has had many problems, especially where I have been working on a part time basis for the past few months. The company in question has had a rash of people leaving for a better climate or pay or who know's what. As a result, their great computer department has had trouble getting the jobs out. This is where I come in. I have been teaching a few people the "art" of photo-composition from a conventional standpoint. It is working. Later on in time, I will discuss a few problems that I have had with the work, and how I solved them. This will give me the chance of answering any questions you may have.

**Kodak has recently announced a new brand of litho films**

Although this particular kind of film has been around for a while, I was recently awakened to the fact that Kodak has a new Litho film system called "Ultratec."

Kodak makes different films for specific purposes. If you call the 1-800 242-2424 number in Rochester, NY and ask for their Graphic Arts Product Guide, you will find the various films listed. They will be happy to mail you a catalog. Tell them you are an independent technician in the field of photo-composition. The standard film for general **Orthochromatic line work is called Ultratec UHF film. The standard film for Panchromatic line work is called UPF film.**

All Ultratec films are processed in a specific developer. Ultratec tray developer or the machine load of the same chemistry. For tray

processing use the 2 1/2 gallon cubitainer. It is used straight for 2 1/2 minutes at 68 ° and fixed in any standard fixer. I like Kodak's Rapid fixer.

These films develop to a rich black that defy any light getting through them.

**I get questions from my readers every week. Some of them are a bit difficult to answer**

For instance:  
How does the "Average Density" of a transparency affect the exposure of that image to a mask or to another piece of film such as a black and white conversion, a contrast reducing mask, or a set of separation negatives.

The term "Average Density" simply means what it implies. The average between the darkest area and the lightest

area is the "norm," or the center. This should be the average density.

An example: If the shot is a normal image, it means that the image is evenly covered with a nice even amount of light and dark areas.

However, a transparency that has a white kitchen with white walls and white furniture and a white refrigerator is not an "average" image. It is lopsided. There is more light areas than anything else. It would be a bit trickier to establish the correct exposure.

**Remember, the aim in making any kind of mask or negative is to make sure that the image is placed somewhere evenly on the straight line portion of the films curve shape.**

You are not printing grey scales but only using them to make sure that you have achieved a balance between the different films.

If all you ever had to print was a grey scale, life would be very dull. You would never have to change an exposure or developing time. However, nature has seen fit to make sure that all scenes and transparencies are different, unless they are part of a room scene shoot and the lights never move.

If you have a dark transparency and wish to make a more pleasing print, the best thing to do if you are making either a standard black and

white negative or even a mask would be to give the exposure a longer time.

How much longer?

It depends on the subject.

For instance, if the image appears "normal and you want to make a negative (black and white or color) simply read the density at the highest area and also at the lowest area, Add the 2 sets of numbers together and divide by 2. You now know what the average density of that particular transparency is.

If you made a good grey scale (mask or negative) from a film step tablet simply read the high and low areas of the original and again, add them together and divide by 2 for the answer. If your average density was 1.90 and it required 10 seconds to produce a quality image, great. You now have documented proof that the image which displayed an average density of 1.90 required a 10 seconds exposure. However, the next image is dark and has an average density of 2.20. The difference in density is +.30. What is the new exposure?

If you have been a subscriber of mine for a while or have one of my books on Dye Transfer, Cibachrome or masking, the solution is simple.

Go out and spend a fortune on a calculator.

The TI=-30 will cost you around \$14. Use the log

scale of this little gem to discern the new exposure. If you have been around the darkroom field for a while, you will realize that a +.30 difference in density will require a 100% increase in exposure, either by exposure time or an increase in light intensity. A minus -.30 would require cutting the exposure in half, or lowering the light intensity.

In case you have forgotten the ritual:  
using a TI-30 calculator.

to increase the exposure:

- 1-press the diff. (.30)
- 2-press INV
- 3-Press LOG
- 4-Press X
- 5-Press the old exp.
- 6-press (=) for answer

to decrease the exposure:

- 1-press the diff(.30)
- 2-press INV
- 3-press Log
- 4-press 1x
- 5-press X
- 6-press old exp
- 7-press(=) for answer

What would you do if the image in question is as described earlier. A white room, with a set of white furniture, etc. Since you have already determined the exposure by dividing the two extremes, why not just use only the same light density for making the exposure. Keep a record of the light exposures for future problems.

An image may have the same density range and still be off completely when it comes to the **Average Density**.

An example:

A density of .30 and 1.90, is a density range of 1.60, and when added together makes 2.20, then cut that in half and the **AD** is 1.10

A new transparency is read and it exhibits a density of .65 and 2.25. It's density range is the same as the former reading, also 1.60 ( but the **Average Density is different**.

.60 plus 2.20 = 2.80, cut this number in half and the answer is 1.40.

The difference is .30, and a full stop more exposure is needed. The mask would need more exposure, as would the negative or whatever you are trying to achieve.

Many of my students have had some difficulty in understanding this concept.

I remember working with a very experienced Carbro darkroom technician. He was making separation negatives from a transparency and the client wanted a Carbro print.

I remember that he made the separations and when I saw them I remarked about how thin they looked. He acted surprised and said that if he "ganged" a bunch of transparencies and that if the level of brightness was

not the same between the images, that it was unfortunate, but that was the what life was all about. He refused to make the negatives over, even after I explained about how average density works. He was so immersed in his world of repetition that he refused to "see" the reason for the change in density.

This had a very unsettling effect on me. I couldn't make him aware of the reason for this approach to quality imaging and I was almost lost. I knew I had to teach him, but he was my senior by many years and I couldn't find the right way to make him understand.

One day, years before I really understood the concept of Average Density, a client came to our lab and showed me some scenes shot on the deck of one of the cruise ships These pictures were to be used to produce a high class brochure featuring the beauty of the vessel and the many fine hours of fun, etc. The client was an art director for a very large and influential advertising agency. The 35mm slides were at least 2 stops underexposed. They couldn't shoot it over as the ship had sailed.

The term "average density" was born during this particular job.

Using only my eyes as the criteria for a quality separa-

tion negative, I kept increasing the exposure for the masks because they were empty in the shadow areas.

Once I had found the correct exposures for the principal masks, The next job was to find the acceptable density for the main separation negatives. I didn't care what the original looked like, but only that the negatives had to show some details in the shadow areas. I was primarily concerned about how the print would look, and not if it matched the original.

It worked. The print had details that I didn't see in the original.

The print was sensational. I was ecstatic about how it looked.

The client came and looked the job over. He loved it, but then remarked that I had lost some of the cloud details. I felt badly about this. In making the print lighter I had to sacrifice some of the cloud detail. If I wanted to keep this client, I had to maintain some form of quietude. Never the less, the job worked. And it was here that I discovered that every transparency really has it's own density range and especially it's own Average Density.

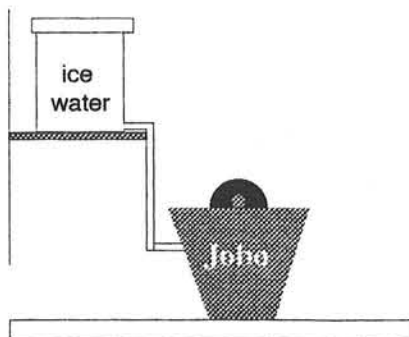
This procedure was perfected over the years and became a mainstay in my operations.

The Carbro man that didn't

believe in changing exposures because they would affect the grey scale differently went bye bye.

### **Jobo temperature control**

Another of my readers had trouble maintaining the correct temperature in his Jobo CPP2 processor. The heat in his darkroom as well as the water was higher than the temperature needed to process his different materials. This specific Jobo has a insert pipe attachment that allows one to add some cold water to the machine as needed by the use of a thermostat. I sent him a sketch of a "simple to build" water cooler. Well, to, make a long story short, he couldn't find the parts, or maybe he was more like my son in law and didn't know how to handle tools. I gave him a new sketch.



By simply placing this large plastic garbage pail (or tank) on a nearby shelf that is higher than the Jobo unit, then filled with water, just add some ice cubes to the tank and you will have a full day's supply of cold water. Now, when your machine

needs cooling, the thermostat will activate and let cold water into the unit and shut off when the correct temperature is reached.

There are a million ways to skin a cat.

This same reader wanted to know if it was O.K. to process masks in the Jobo. It is the best way. Make sure that you make tests to find the correct spinning speed, and make sure that you alternate the rotation. The masks are a bit tricky to handle. **Kodak's Pan Masking film is extremely delicate until it is hardened and dried.**

This step requires very careful handling procedures. Practice with the room light on until you know what you are doing. Wearing gloves wouldn't hurt, although I rarely used them myself. Make sure that the tubes you use for film are **film** tubes. If you use the conventional paper tubes, the chemistry will not clean off the anti halation backing found on most films.

### **Another question from a reader**

is that he can't get a grey scale without getting crossover. This isn't news. Since the very beginning of the Cibachrome process, the bottom of the scale has exhibited crossover. All you can really do is to grin and bear it.

However, if it really bothers you, then here is a solution to this problem. Instead of making a print directly from a transparency, make a set of separation negatives, then convert them to a set of positives, and expose each positive through the proper filter. (red 29- green 61- blue 47B) At this point you will be able to make the correction masks needed to either increase or decrease the coverage in the shadow areas. This procedure must be done by eye.

You will need registration equipment and lots of coffee.

Time consuming? Yes.

Is it worth it? It's your image.

### **Another question from a reader asked about the exposure times for making internegatives.**

When the Type C (Ektacolor) process was first announced in 1950 the only material we had to work with was the original color negative material. We couldn't change contrasts in any direction. We relied on our ingenuity. A condenser enlarger produced a slightly contrastier print and a diffusion enlarger produced a slightly flatter print. That was it. If you wanted more contrast, then the Dye Transfer enthusiasts had the answer. **Masking.**

In this case a positive was made using Super XX film and from this positive, a

highlight mask was made which was then added (in register) back to the original color negative and a more brilliant print was able to be made. If you needed a softer contrast than all you had to do was to make an exposure using Pan Masking Film, processed to a specific degree and add this back to the original color negative and you could easily make a flatter print.

**The trick here, of course, is control.**

This is why I have always maintained that a need for accuracy in print production included a professional seminar on masking.

All materials are produced by the manufacturer to a specific contrast range and require a specific light source to be used for the exposure.

For an example, you should never use a cold light as the light source for your enlarger. when making any kind of color print.

It is probably fine for black and white printing, but even with black and white I would still rather work with an incandescent bulb.

The cold light is a color blind source. It's spectrum has missing elements that would make it a full color spectrum. A color corrected fluorescent such as the MacBeth tube is better than average, but I still would rather rely on the full spectrum bulb. Any household bulb is better

then any gaseous tube system. The quartz bulbs used in the modern enlarger are fine. They burn at about 3800° K and do the job correctly. This is one of the reasons that I do not recommend the Minolta Pulsed Xenon color head for Cibachrome printing. The color filters are not sharp cutting enough and the exposures are quite long. The head is fine for the other kinds of color printing, such as Type C & R.

Not long after the introduction of the new Type C process, Kodak unveiled a new Internegative film. The whole idea here was to be able to make a color negative from an existing color transparency.

The way we had to use the new material was to find the elusive color pack and the correct exposure time needed to make the image. Grey scales and much graph paper was used to find the exact times. However, one great aspect of the system was the ability to change the contrast of the new negative by changing the exposure time.

The longer you exposed the image, the more the contrast would be increased. The less you exposed the image, the lower the contrast would be.

This was a great innovation. It still is. However, most professional labs depend on a computer program that will

divulge the correct filter pack and exposure time once the necessary information has been loaded into the computer. One glaring fact has appeared on the scene. Most labs have forgotten the fact that contrast could be changed quite easily without losing the filter pack information, or the correct exposure times. Most labs simply enlarge the image on the easel. remove the carrier, set the filtration and read the light level on the easel. Replace the transparency and make the exposure. The images do come out with a correct color balance and an acceptable contrast, but perfection is hardly ever achieved with this system.

Here is how I do it.

I also use the computer to give me the filter pack and starting point for the exposure. Here is where I differ. If the original transparency is on the soft side and needs a boost in contrast, I lengthen the exposure by 1/4 stop increments, while at the same time, stop down the *f* stop to the same degree thereby keeping the overall exposure correct.

This works in any direction. On the other hand, if your original is darker than you would like and a normal exposure on the internegative would reveal a low shadow image, simply open the lens *f* stop to the degree needed and keep the exposure where it belongs.

My reader was unaware that the contrast could be changed so simply.

By this time you should understand why I love the Dye Transfer process. With this process, I make all of the decisions, and work with raw material. The ability to make the process work is a great gift. Some fantastic prints can be made by using the knowledge and the creative juices that all of us have stored somewhere.

**Another question was asked about processing Litho film. When do you know it has been processed to it's full-potential?**

If you are working with a film processor, just look at the results when a test is placed through the system. If the dark areas are not dark enough, slow the machine down, or increase the exposure.

If you are working with a tray system, place a small night light in a socket near the sink and place a clear bulb in the night light. Then place a red material (like Rubylith film) around the bulb. The filaments should be easily seen. When the filament is hard to see through the deepest black, during the processing then the time has come to remove it from the developer.

**Another question from a reader.**

**He asked: Have you ever heard about processing continuous tone negatives by inspection?**

Have I ever? When I first joined the zoo called lab work, no one, including Kodak, knew too much about curve shapes and contrast adjustments. I was shown a darkroom and a processing tank and told to process the material and to use a deep green safe light to inspect the film to see if enough density had deposited itself on the film. What a joke.

Some "die hards" felt as if they could see better than an owl, but their work did not support their claims of super eye sight.

I had just finished reading about Hurter & Driffold, the two English gentlemen that discovered the curve shapes that exist on all films and how they produced the theory of how gamma could be determined in advance. I was "Gung Ho" at this time. I knew there had to be a better way to produce saleable negatives by brain power rather than by eyes in the dark.

My first chance to prove my point was at a prestigious photo studio in New York City

I tested the specific film, plates and developers and knew exactly what the gamma was for every 30 seconds in the developer. I tested one sheet and then

processed the rest of the batch without the use of a green safe light to "inspect" the image quality. I was a hero for a time.

Eventually, I was lucky enough to join a quality color lab that produced the best work in the city. They only produced quality Dye Transfer and Carbro prints. I was soon given the job of producing separation negatives. I had to follow their instruction to the letter, however, occasionally, I would veer off course and produce a better negative without any fan fare. I never divulged what I was doing as I could have had been axed.

Processing by inspection has disappeared from use today, but a few practices are still being used. This I know from first hand experience. Most black and white films are processed to a gamma around .75. This is done so that however the negative looks, it can still be printed on variable contrast papers and do the job. The chemistry in a large 8x10 tank is replenished every day and sometimes the chemistry is not changed for weeks or months. How does anyone know what gamma they are developing the negatives to? No one really knows.

It is amazing that large labs practice this hit and miss method of processing or even the simple job of making black and white internegatives.

The job of a good lab technician is to process only one sheet of a run, or a nip test from a roll, examine the results and make the appropriate changes in processing so that a true quality print can be made. I worked in a large studio that used the inspection method for years. The results they achieved was only because they were close to the correct developing time for a gamma .75.

In fact, I was asked to process 4x5 glass plates in order to make a Carbro print. I used to place all the red filter negatives in a group by themselves, the green negatives in another group and the blue negatives, again, in another set. Try to imagine holding up one hanger with one 4x5 sheet of glass in it and trying to find a density.

What about balance? Forget it. I don't know how we made some of the prints in the early days.

Using a one shot camera had enough of a nightmare feature built in.

The filters used to make the separation negatives were built into the camera itself. This set consisted of a red (25) green (59) and blue (47). The speed of the camera was about an ASA 5. Since all of the three plates were exposed at one time, there was no way in the world that a balanced set of exposures could be made. The camera wasn't manu-

factured with a specific film or plate in mind. As a result, the densities of each negative was no where near the others. To top all of this off, we were asked to process the films or plates by inspection. It is impossible to examine any film or plate in this manner. The amount of light needed for this kind of operation was tantamount to a brilliant light box. .

At one time, I used our own one shot camera and hired myself out to any studio so that I could monitor the development of the separations. I would first shoot a series of films or plate and processed them to different degrees of contrast. I was then able to select the least damaging set and asked the studio owner to allow me to process the final films. We got pretty good results. Not perfect, but pretty good.

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**Another reader asked me how I managed to operate the wall switch for the room lights when I was processing by hand and had a possibility of getting electrocuted with wet hands and a wall switch.**

This was a major concern of mine for many years.

I devised system that allowed me to place a clothesline line around the entire darkroom, and by guiding the line through hook eyes and using springs, attached the end of the line to a top quality

toggle switch which operated the bulb. This elaborate system worked fine. Where ever I stood in my lab, I simply just reached up and hit the line and the light would be turned on.

However, I have an even better idea. Are you familiar with the light switch that is operated by the clap of your hand? Here is a great solution. Purchase such a switch and use it as the main switch for your darkroom. Imagine going into your darkroom, prepare for some tray processing, and when you are ready, just clap your hands once and the room lights go off. Then when you are finished with the processing, clap your hands once again and the room lights go on.

I wish I had the availability of such a switch when I was processing my masks and separation negatives by hand. Don't make any unexpected noise during the processing steps otherwise you may be awakened by a very bright darkroom.

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**Why use filters when making contrast masks for Cinbachrome?**

This question came from a frustrated student who had difficulty in finding the recommended filters

The main reason is that the Pam Masking film is sensitive to Red more than anything else.

The Pan Masking film is sensitive to all the colors and must be guided to produce the correct result. If your image consisted of red apples in a basket, and needed masking for contrast control, the effect on the apples would be devastating. All areas in red would show up on the Pan Masking film out of proportion to the rest of the image. The apples would look darker. If a green filter was used, the reds would be rendered very bright red. If a blue filter were used, the results would be terrible. So, the trick here is to find out what the optimum exposure is for all three filters so that 33 1/3 % portion of each exposure could be used to make a truly unbiased mask. If the image was of a girl with red hair, and you wanted to exaggerate the red, use a green or blue filter to make the mask. A simple **split mask** exposure could be used to make a mask for an image that also consisted of green trees and flesh tones. Use 50% of each color exposure to make the mask and the flesh tones and the greens would not be adversely affected.

For instance:  
 If the normal red exposure was 10 seconds and the green was 30 seconds, then 50% of each exposure would be 5 and 15 seconds respectively.

In this way, some form of creativity can be used to enhance a portion of the print.

**Take your choice.**  
 A scene depicting a prairie scene with a startling blue sky. What kind of mask would you be leaning towards?  
 Remember, if you use a red filter, all warm colors in the scene will be darkened, and all the blue areas would be lightened, and purified. Suppose the scene has important redwood bark of fallen trees in the foreground, and you felt that the trees are more important than the sky, then use a green filter to make the bark richer and brighter and the leaves a bit deeper.  
 The amount of control just in the choice of filtration or in the degree of the filters used is very critical in making a quality print. I used to use splits such as 40% red and 60% green, and sometimes 80% red and 20% green.  
 I was all over place. Splits became a simple way of contributing to the production of a better set of separations or a better Ciba print. In making a Ciba print, there are times when a simple white light highlight mask made using Kodalith Ortho film can add wonders to the "look" of a print. However, there are times when the mask should be made through a Panchromatic Lith film .

The reason should be obvious, If you are trying to exaggerate the fury of a brilliant sky, make the highlight mask through a filter that compliments the sky color. If the sky is yellow, then a 50% mask each through the red and green filters would produce the necessary details in the mask to help exaggerate the effect.

A colorful bird image is a beautiful thing to observe. If you have a peacock in your library of images and you wanted to make a great print, find the colors you want to make brighter and use that filter, or filters (with the correct percentages) and the bird is liable to fly away.

I know I am exaggerating a bit, but since I have been involved with the photo composition business, I know what it takes to make a great image even greater. I would appreciate it very much if you would send me a sample of your efforts. I am anxious to see the results of my subscribers. If you want any information about my home study course, let me know and I will send you a catalog of my offerings. Thanks,

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