

# KEEPING PACE

A Monthly Newsletter Devoted to the Art of Darkroom Photography

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## HOW MANY KINDS OF COLOR PRINTS CAN BE MADE FROM A COLOR NEGATIVE.

**How many ways are there to make a color print from a color negative?**

1. Make a Type C print
2. Make a Dye Transfer print using Pan Matrix Film
3. Make a Vericolor print film and then a Dye Transfer print
4. Make a Vericolor print film and make a Ciba print.
5. Make a Vericolor print film and make a type R print.
6. Make a Vericolor print film and make a new Fujichrome print.
7. Make a set of black and white separation positives and then a set of separation negatives, from which a Dye Transfer print could be made.

8. Make a set of black and white positives and make any reversal print using separation filters and tri-color exposures.

There are probably a few more ways that I can't think of at this moment. The big question is this.

**Which is the better way to make a color print?**  
It all depends on what results you are interested in achieving.

**Lets start with # 1.**  
Making a Type C print. This is the fastest and most economical way to make *any* kind of color print. If you have an automatic processor or even a simple rotary tube system , it's possible to see your processed print in a matter of minutes.  
**What about its quality?**  
From the large array of prints that have been pro-

duced by "art photographers", the quality looks rather fine. The colors produced by the major paper manufacturers keep improving constantly and from my personal observation, the artists have been improving as well.  
In fact, the largest percentage of color prints made for the art gallery communities are predominantly Type C prints.

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Let's examine a typical printing session in the lab of a top notch photographer. The negative is selected and sized in an enlarger usually equipped with a dichroic color head and a test print is made.  
The first thing that the printer is looking for is density and then color balance. The average color printer is about ready to make his final print once these two criteria have been met.

**However, with a quality minded and creative printer, he is just beginning.**

Here is where the print is **dodged and burned in**, sometimes with a filter, and sometimes without.

Finally, when he has exhausted his attempts to improve the print, this is when the final print is made. If a run of 20 or 25 prints are to be made to fulfill a limited edition, then the prints must be made with repeatable precision.

It has been my experience to see only 1 or 2 negatives printed in a full days session. I have also seen an entire job scrapped because of the artist not being completely happy with the final result.

And this was just the first way to make prints.

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**The second way to make color prints is by making Pan Matrices directly from the color negative and then proceeding to make a Dye Transfer print.**

This requires a totally different approach than the first method.

Instead of an automatic, or even tubular processor, the lab technician must now be equipped with 7 trays that will match the size of the matrix film that he plans to use. The chemistry is totally different. Now he must use

tanning developers in a tray, and learn to handle large sheets of film, and also learn to process by hand.

He will need a rather large sink and transfer area.

The tools of the process are also rather different. Rollers, squeegees, graduates, sponges, pin register systems, containers for the dyes and paper conditioners, some method of mixing and transporting large quantities of acetic acid.

The cost of all of the required equipment varies. If you are handy, you can build most of your own facilities. If you are not handy, and do not have the money to hire plumbers and carpenters, than you had better stick with the first system.

You or your lab technician will have to learn the procedures and skills required in order to make a quality print.

This is not achieved in minutes as it is with the first version. He must understand the principles involved in using separation filters.

**The biggest problem with this process, when compared with the Type C print process is this.**

Once the exposures for a set of matrices have been determined, and then the matrices are processed, and a proof is pulled, the opportunity for making drastic corrections by dodging and burning means that another set of matrices must be

exposed. Remember, this is a tri-color exposure. Any dodging or burning in must be in the exact place and for the exact time. This is practically impossible to do.

If this were a Type C print, the technician would simply calculate his corrections and go back into the darkroom, make a manipulated and corrected exposure, and 6 minutes later, the corrected print is popped out of the machine.

For the Dye Transfer print, In most cases, a new set of matrices would have to be made in order to accommodate the corrections needed.

Is the fact that the print is more trouble to make, any reason to discount it? **What about quality?**

It just so happens, that the sensitivity of the Pan Matrix emulsion far exceeds the color sensitivity of Type C paper. The dyes are much more accurate and also adjustable for contrast control.

**The biggest advantage is this.** You can control the contrast of any color in the print, in any direction, and also control the slightest balance correction.

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**What about the third system for making prints from a color negative?**

**Making a Vericolor Print film transparency, from which, a Dye Transfer print could be made.**

In this regard, I am slightly prejudiced. Since I have been making Dye Transfer prints, and related prints for almost 50 years, I have come to certain conclusions. I feel that I know which process is the best way for making prints from original transparencies compared to any other system in the world.

Why should any one consider making prints from a Vericolor print film transparency? Well, it is really simple to see and understand. In order to really see the difference, make the finest Type C print that you can, and then make the finest Vericolor print film transparency that you can. Compare them closely. The information that is ingrained in the color negative, is not totally being utilized by the Type C paper. You will discover that the information that is in the color negative is far more detailed and richer in color than the Type C print is capable of producing. This is the fault of the Type C paper.

The Vericolor print film transparency will display far more detail and color richness than you would ever see in the Type C print made from the same color negative.

Then there is the great advantage of being able to make the separation negatives fit the contrast range

that your enlarger is capable of producing. This means that you will have a tremendous ability to change the way the original looks, and make it fit your own creative eye. **That is what quality photography is all about.** The disadvantages are also present. The amount of time that it takes could run into 2 or 3 days to make a repro-quality print, compared to 6 or 7 minutes for a Type C print.

But, it depends on you. If you are satisfied with the quality of the Type C print, then save your money and don't budge from your position. You will probably make much more money with an automated system than a system of working by hand.

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**Now, let's take a look at system #4.**

**Make a Cibachrome print from the Vericolor Print film transparency.**

If you want speed and quality, this is probably the easiest and fastest way to get an overall "excellent" print. The dodging and burning capabilities are also possible, and the sharpness of the final image is, without question, the sharpest of all.

**The disadvantages are slight.** You must be able to make the correct contrast mask in order to achieve the best possible results. This is a relatively simple chore to understand, and to be able

to produce with accuracy. It will also require one to obtain registration equipment for the enlarger. This will include a film punch, and a register carrier, including its housing. This equipment is readily available, but is not cheap. If you really want to go "whole hog" and get the best of all possible systems, make sure that you include a vacuum register easel so that you can **do more** than just make an exposure on the easel.

**Another disadvantage** is the fact that almost every box of Cibachrome paper material shows a slight crossover in the shadow portion of the paper curve. There is a cure for this problem, but the steps are so involved that you might give up on the system and take up brain surgery instead.

**The advantage** of working with this system is one of speed, combined with a certain amount of quality. The Dye Transfer still has the edge when you consider the different ways that the image can be manipulated, but the overall quality is great. The greatest single advantage is the remarkable shape of the curve that the material is able to produce. The line is almost straight. I plotted the curve shape of the material and tried to make my separation negatives for the Dye Transfer



process come as close as possible to the Cibachrome shape. This has certainly improved my Dye Transfer quality.

You will need different equipment for processing this material. For a small lab with a limited amount of production, either a CAP 40 table top processor, or a Jobo CPP2, with a lift should suffice. If you are really contemplating large production runs then consider one of the larger professional roller transport systems.

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#### **What about system # 5 Making a Type R print from Vericolor print film transparency.**

The exact exposing procedure applies here as it did for the Cibachrome process, except for the difference in material and processing techniques. Remember, this transparency has more information in it than the Type C paper is capable of exhibiting.

The prints made from any transparency onto Type R material is second rate when compared to the previously mentioned processes.

The only real advantage is the price of the material and its speed. That's it.

The colors may, or may not be, as close as a Type C print.

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#### **What about system #6**

##### **A new product on the market is Fujichrome reversal paper.**

This uses the same chemistry as Kodak's type R chemistry, and according to several sources, it looks great. The overall contrast of the material has been lowered so that more transparencies can fit the the contrast range without masking.

This may, or may not be, a blessing. I will know more about it when I make some tests for myself in the very near future.

The fact that you will be working from a Vericolor print film transparency will certainly improve the quality of the print because of the greater amount of information in the transparency.

These last two systems are not to be considered any better than working directly from a color negative except for the fact that the transparency will look better than the Type C paper. For the amount of trouble that one would have to go through, the image would have to be one of considerable quality and beauty.

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#### **What about system #7**

Making a set of accurate separation positives from the original color negative, using separation filters and getting an accurate representation of the original. These posi-

tives are then converted into separation negatives, with highlight masks, and whatever necessary color correction masks, in order to make an even better print than a Type C print from a color negative.

Does this sound like a lot of work? You bet your life it does. However, we are talking here about alternative methods.

Some of my associates in the color printing field feel that making a Vericolor print film transparency is the wrong approach because of its creating a "generation loss". I have no argument with this thought, but I do feel that from what I have seen, that this is a small problem. I feel that there is more of a loss by first making a set of positives, and then a set of negatives made from these positives.

Talk about "generation loss". The advantage here is one of **quality**.

By making sharp and clean positives which are accurately processed to the proper gamma, and then a set of reversed negatives, that the quality begins to approach that of an original dye transfer print made from a transparency. All of the Dye Transfer controls are now in your possession and all of the creative tools and systems, can be used.

When the new **Kodak book** on Dye Transfer is released, there will be an article written by Tom Rankin, of Frog Prince Labs, San Francisco. He will describe the entire procedure that he used when producing a series of prints from old "turn of the century" color materials. This will be a very informative article.

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**What about system #8 Making a set of separation positives from the original color negative, and make a print on any positive material using the tri-color method of making prints. The advantage here is one of control.**

Imagine being able to not only expose the positive material, (Ciba, Fujichrome, and Type R) with extreme accuracy, but being able to mask any of the positives in any direction to influence contrast or color correction in any layer of color. For this system, as well as most systems that I have described, a complete registration system will be necessary. This can be costly, but well worth the effort.

**There are disadvantages here.**

In order to make these positives, you must make **time gamma charts** in order to control the curve shapes and contrast of the positives.

This requires a good densitometer and the knowledge of how to use it. The disadvantages of such a system is to **weigh the cost** of such an endeavor, and the time that it would take to achieve a quality print, **against the simplicity and ease of just making a Type C print**

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These then are a few ideas to think about as you go through the trials and tribulations of improving your work. I know what it takes to make quality prints. They were never easy to achieve. It took hard work and the correct approach.

**Here is another thought** that was supplied by one of my recent students. **Is it possible to make a Type C print from a set of separation negatives using a tri-color approach?**

Think about that question for a minute.

Could it be done, and what would be the advantage of such a step?

Well, for one thing, **it is possible.**

The required separation negative density range would be fairly close to the range required for either the Type C process or a black and white print.

I remember needing a range of .95 when making a Type C print from a color negative,

when working with a condenser enlarger. The required density range for separation negatives used with a condenser enlarger is about .90. That is pretty close.

The whole idea is, that it would be much faster and cheaper to make a Type C proof print, before committing yourself to making a much more expensive set of matrices. **The idea has merit.**

If you are a creative printer and resort to much dodging and burning and can easily and quickly produce a print with all of the possible variations included in the C print, then you can make a set of matrices with all of the same corrections.

You simply must use an unexposed and fixed out sheet of color negative film to place in the carrier when making the tri-color exposures from the separation negatives.

Imagine being able to show the client a quick proof print for approval before making the matrices.

The disadvantages are quite substantial. It would mean determining the factors for each filter, precisely. Then using much math to convert these numbers into the correct exposures for the actual matrices. But it is possible and can be done. I will test this system out, before the next issue of "Keeping Pace" and tell you of my

progress.

**In my last Issue, I discussed the method of making masks through the enlarger**

in order to eliminate the edge effect caused by the mis-alignment of the mask and transparency.

I said that all you needed to do was to place a sheet of white paper on the easel and light it in order to use the enlarger as a camera.

**Let me make a correction.**

This system of lighting paper on the easel is fine except that the exposures will be extremely long. I have an alternative system that I'm sure will be much more accurate and much faster.

**It works like this.** Place a Kodak Acorn safelight just under, and facing the lens. Use a 250 watt (#213) bulb. Block off all light, except that coming through a 3 inch filter holder. Use the separation filters that are used to make the masks and place them in Kodak's 3 inch filter holders. Use the same search and developing technique in order to find the correct level of exposure and development times that I described in the last newsletter.

Once you find the correct exposure, the next problem is "how do you repeat the same exposures for different enlargements or light settings?"

The technique is as follows. Once you have established the correct exposure, re-

move the carrier and place the probe of any easel meter right under the lens. (You may have to diffuse the lens if it is too bright).

Then, take a reading of the **enlargers light intensity.**

Record this reading.

From now on, whenever you use this technique, all that has to be done is, to size up the image on the easel, remove the carrier, place the probe under the lens and adjust the f stop until you obtain the same reading.

Then, in the dark, and in the same carrier, place a sheet of fresh, unexposed Pan Masking film, emulsion down, on the same pins as the transparency, and then replace the carrier into the carrier. At this point make the necessary exposures through the appropriate filters. Process this sheet of Pan Masking film to the correct gamma, and use them back in their original position. The alignment should be perfect. The "trick" here is to make sure that the same lens that will be used for the making of the print is the same lens used for making the principal mask.

**One of my readers recently asked me to evaluate the differences between Dye Transfer and Cibachrome.**

What are the differences and what are the advan-

tages and disadvantages of each system.

Let me begin with the advantages of both systems.

**The Dye Transfer process**

allows one to make a print with virtually any kind of contrast, density, and color balance, with incredible adjustments at every stage of the process, starting with the principal masks, the separation negatives, the highlight masks and the matrices, and finally, in the trays, with almost unending amounts of controls and corrections that you can dream of. No other process allows you this kind of creativity.

That was quite a mouthful.

**The Cibachrome process**

is a dye destruction process that is also very brilliant and extremely sharp. The material is somewhat on the contrasty side. This is really an advantage, because it allows you to custom fit the print quality into your own concept of what a quality print should look like.

The colors are the most accurate that I have seen. The dyes will last for years and years before finally fading. The whites are detailed and need little correction because the curve shape is almost a straight line. When masking the image so that it will fit the required density range of your enlarger, it is possible to



create color improvements through the use of filters when making then contrast reducing masks.

The shadows are flatter than the rest of the curve shape thereby allowing detail to be easily held in the bottom portion of the image.

The print can be processed in as little as 12 minutes. This allows for great speed in delivering a quality print.

### **What are the disadvantages of both processes?**

The Dye Transfer process requires knowledge of densitometry and sensitometry. Physical handling of the materials is also required and you will need some dexterity in handling films and chemistry.

The process is not the sharpest system. In fact, if you examine the print closely, you will find that many areas, if not the entire print, has a soft look in the actual details.

The amazing thing is this. Even though the prints are not as sharp as Type C or Cibachrome paper, the illusion is, that it is sharp. The edge effects caused by the diffused quality of the principal masks make the print edges stand out and appear sharp. Only small Dye Transfer prints are noticeable for their unsharpness.

Years ago, one of my accounts was an animation

studio that required many prints of different sizes of a product that was to be animated. I had to make prints from a 4x5 transparency of a box of cereal called "Cap'n Crunch". The client wanted 10 to 20 prints from each size that he needed.

The smallest print was a very tiny print, less than 1/2 inch in height.

I made the print with the Cibachrome process. All of the fine lettering on the front panel of the box was readable when using a 20 power magnifier. If this were a Dye Transfer print to the same size, the registration would have been a little difficult, and the lettering would have looked smeared.

On the other hand, making split masks and different contrasts in each separation negative would completely overshadow these faults of a Dye Transfer print.

The methods that I use for color correction are not that easily transferred to a Cibachrome print.

The Dye Transfer process is not a quick system. It takes hours to just make the separation negatives. It takes even longer to make accurate matrices that balance.

But the results are, that the finest prints in the world are still made via the Dye Transfer process.

As I said earlier, I am somewhat prejudiced.

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I have also been asked by a former student, about the possible comeback of the Carbro Print.

I know that a New York lab is producing Carbros via a western based lab for a considerable amount of money.

Take it from me. Except for the fact that it holds a special place in the history of photography, it is as extinct as a dinosaur. And for good reasons.

The color balance of the pigments, which are manufactured in West Germany, do not even resemble today's transparencies. The process is such that only one print can really be made from a set of black and white bromides, and producing a print that resembles any transparency would be rather difficult.

If you were to make a set of separation negatives directly from a scene or table set up using separation filters and shooting three separate negatives, then the final print that you could produce would be more acceptable as a fine print, since there would be no transparency top judge it against. If any one is interested in how the process works, let me know. If I get enough requests, I will write about it in a future newsletter.

**I have been privileged to work with a group of scenic photographers from northern California, who's work is simply great. They are able to take pictures in color that doesn't need color to exploit the natural beauty of the scenes that they have captured.**

Most books that deal with color photography sometimes look more like renditions of picture post cards than true color renditions of the scene. This is because the colors in the transparency have been distorted by the enormous contrast increase created by the color film itself. This is not always objectionable. The main thing to consider is this:  
Suppose Ansel Adams had shot "Moonrise" in color instead of black and white. Would it have the same impact that the familiar version has had over the last 40 years?

This is a tough question to answer. **Just when is color, too much color?**  
Most photographers that work in black and white feel that they have an advantage over color photographers. **They do.**  
To make an acceptable print in color, one should not purposely try for too brilliant a color effect.

Here is some interesting news about working with the new computerized scanners and electronic imaging systems.

The latest issues of MacUser magazine and Video magazine have demonstrated just how far the quality of electronic image has progressed in the past year. Last year it was possible to capture almost 600,00 pixels of color information on an electronic chip the size of a 35mm transparency. A 35mm Kodachrome transparency has the equivalent of millions of pixels. There for we, the image quality still has some way to go before it achieves the "fine grain" look of an original transparency. The fact is this. The electronic chip manufactures are already working on such a project and will eventually reach their goal. An electronic camera already exists that can place 50 images on a small 2 1/2 inch disc and have it immediately shown on a video screen when "projected" through an electronic recording device.

Electronic retouching is already here. I have already seen what can be accomplished by a new digitized image correction system. It is mind boggling.

I have been getting phone calls from all over the country and two from overseas, about the video and book that I have been working on for the past year.

**The status is as follows:**  
The shooting script has just about been photographed. There are a few pages to go. The props have just about been finished, and the book is finished, except for designing the cover and finishing the layout.

I expect that the next newsletter will include a date for the release of this effort.

The Kodak book on Dye Transfer, which is still being produced, is due sometime in March. Don't feel bad about the delays. Imagine how I feel. I submitted my manuscript in August of '84. But from what I have been told, it should look great and contain information about the Dye Transfer process from 4 or more, different viewpoints.

Incidentally, my newsletter is still \$60 per year. The back issues are \$4. ea. and my book "The art of Photo Composition" is still only \$50. Thanks.  
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