

# KEEPING PACE

A Monthly Newsletter Devoted to the Art of Darkroom Photography

Volume 36 June 1990

## Shooting Direct Separation Negatives in a Camera?

**Can you shoot direct separation negatives in a camera?**

Absolutely. In fact this was the only way it was done before transparencies were on the scene.

Remember, color photography has been around since 1851.

The first image was shot using a view camera and specially colored starch mixed with the photographic emulsion in order for the proper color to be absorbed through a very primitive piece of colored glass. This was probably was the first time colored filters were used in photography.

It took many years for panchromatic film to be invented.

Early attempts to make separation negatives using orthochromatic films were

never very successful. However, once the color sensitive panchromatic films were created, color photography became possible with much more accuracy and ease.

With today's materials and accurate sharp cutting separation filters, it is a simple matter to make color photographs in a conventional camera using easily obtainable black and white panchromatic films.

This was the basis for the old Carbro process. Three color separated black and white negatives (usually made with glass plates) were exposed in special film holders, one at a time, through the best available color filters.

In the early days of color photography, a company named **Wratten** made the finest filters for the newly

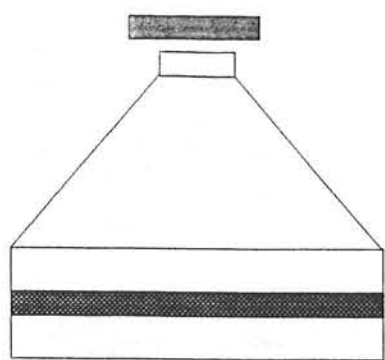
formed photo-engraving companies that were to produce the color plates used to reproduce color prints in magazines. This company was eventually bought out by the Eastman Kodak Co.

Kodak has seen fit to still include the original company name on the filter packaging.

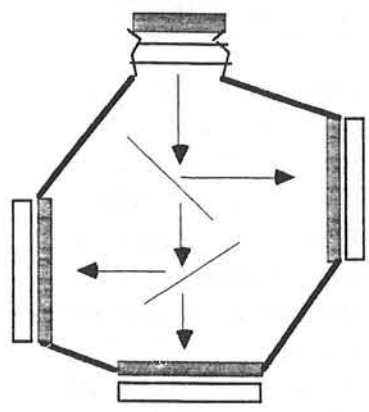
The early color photographer had to make sure that his subjects didn't move, otherwise the registration of the images would be impossible.

As a result, most of the early pictures taken with the tri-color exposure system consisted primarily of inanimate subjects.

The illustration on the next page is a simplified explanation of "how it was done."



The major photographic invention of the early part of the 1900's was the "one shot" color camera.



This camera used one lens, two semi-transparent mirrors (pellicles) and three filters through which the image could be exposed in "one shot." It was quite ingenious. Apparently, each company that produced this kind of camera obtained a patent for it. It was this camera that gave Dr. Kalmus the idea for a movie camera with the same capabilities. This was later to be known as the **Technicolor Process camera**.

But, let me get back to the main discussion.

Shooting three negatives of a scene through separation filters in a standard camera.

What kind of pictures could be made with this technique? Think about it for a minute.

Scenics? What about moving clouds, and wind blown trees and grass, or flowers?

Even if the speed of the film were such that the image on each sheet of film (or glass plate) were able to be frozen in time, the fact that the time between the three exposures would definitely cause trouble because of movement between the exposures.

The early attempts by the French that experimented with color photography, discovered that they could set the camera on a tripod, then using color sensitized glass plates, place the holders, one at a time, into the camera, and make lengthy exposures through the correct separation filter.

If any image moved enough during a slow exposure, it probably wouldn't even appear in the scene.

The exposures must have been long enough to eliminate any record of the normal traffic on a busy road, and didn't record the people or horses or any-

thing else that moved.

The early cameras didn't even have any kind of shutter, just a lens cap.

When I taught at New York Institute in 1946, one of the projects that we used to introduce students to the Dye Transfer process, was to shoot three separation negatives using a 4x5 view camera.

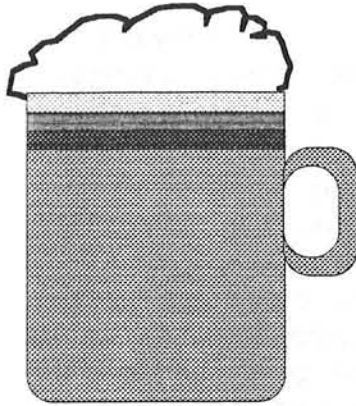
We would let the student set the table top image any way he wanted to.

Invariably, one student would make a set up that was something like this:

A colorful cloth background, with a vase of flowers and a sandwich on a plate with all of the appropriate napkins and cutlery, salt shaker and then, a **big foaming mug of beer**.

We wouldn't say anything. We waited until all of the images were shot, one at a time, and waited for the student to assemble his color print, (we used the Kodak Wash Off Relief system.)

Then we would all roar with laughter when the student, much to his dismay, found that the beer had colored stripes all around the glass, (caused by the beer head getting smaller as time went by).



The flowers also drooped between exposures and were totally out of register.

Then we introduced the student to the "one shot" camera. Life was easier after that.

It was while I was teaching at New York Institute at night and working at Ewing Galloway Studios during the daytime that Ektachrome was introduced to the public.

Kodachrome film was then available in 35mm rolls and sheet films up to 11x14.

Making prints from transparencies had just begun to be thought about in the professional printing community.

Using a camera as the instrument for making color prints is a good idea. It will awaken the average student to understand more clearly just what happens to the image as it is exposed through three separation negatives.

However, you must make sure that your subjects do not move.

Here are some of the problems you will face when attempting this kind of project.

Can you be certain that the three negatives will register properly after they are exposed? This is one of the reasons that glass plates were used.

With today's Estar film bases, holding film size is relatively simple, but the film must stay flat in the film holder.

The images should register perfectly, as long as the camera doesn't move.

Can you positively prevent your camera from moving during the insertion and removal of the film holders? You will have to use a very sturdy tripod or studio camera stand.

You will have to make tests of any image you wish to expose and determine the correct exposures and developing times for each color filter, depending on the color balance of your lighting, the overall brilliance of the scene, and the ratio of light to dark.

This will probably be the most difficult job you will

have to perform.

You will need a densitometer, and some large size paper grey scales. Include the grey scales in the scene when you shoot your tests.

Once you establish the ratio of exposures and the details of processing, you will be tied to these numbers.

This means that if you want to shoot daytime pictures outdoors, you will have to choose the specific time of day each time, to prevent the negatives from straying off the correct color balance path. The exposure times and developing times will repeat themselves with enough accuracy to enable you to make a good quality print.

If you shoot with controlled lighting, make sure that you use 3200 Kelvin lamps and that you are able to measure the lighting ratios similar to the way it is done in Hollywood.

Then, you will have to decide on the kind of images you wish to capture. You will be forced to shoot inanimate objects, otherwise movement will occur.

For instance, one University in southern California teaches the introduction phase of Dye Transfer.

The method is unique, to say the least. They teach the system in the following manner:

The student places his camera on a tripod and focuses on a model who is standing next to a tree and leaning on a car.

The student then shoots the three separation negatives.

Let's examine what happens while the student is changing the filters and holders.

The student is trying to hold his pose, but losing the battle. The leaves in the tree are moving, and so are the cars in the background. The car the model is leaning on is not moving, nor are the buildings in the background, but every thing else is.

Back at the lab, the negatives are processed. Matrices are exposed and processed. They are each dyed in the appropriate color. And dried again. Now, registration is attempted.

To the students dismay, the sidewalk is sharp and so is the lower part of the tree trunk, and even the building in the background looks fine but everything else is out of register.

The leaves in the tree are out of register, and so is the model. The cars in the background will look strange, You will have three separate cars and each one will be either cyan, magenta or yellow.

This is not a good introduction to the Dye Transfer process.

Instead, what we did at New York Institute was the correct procedure.

The student would prepare a table set up. Little statuettes were used. Artificial flowers were continually used. A glass of wine was fine. Some old books and little nick nacks were always used.

The correct color balance lamps were used and attention to the correct lighting ratio was observed.

The prints were excellent. This introduction to the process enabled the student to see the results of his efforts and understand the process much more clearly.

When I was already involved in the Dye Transfer process, I remember when one of our clients, Burry's Cookies needed some photographs of his special cookies for the covers of the box.

Glen Peterson, my employer, made an arrangement of cookies in a special plate, and used little chunks of putty to hold little mirrors at different angles and by using just one light source, produce a lighting effect that emphasized the texture of the cookies and gave the little batch of cookies an elegant "look."

Glen then placed an 8x10 view camera in position, at the proper angle and height, took enough meter readings to convince him of the proper lighting ratio, light intensity, and image quality, and shot three separation negatives in the camera by changing film holders and filters.

The filters used were the Red 25, the Green 58 and the Blue 47. These filters are not as sharp cutting as the filters used in making separation negatives from transparencies.

The film used was Kodak Super XX and the developer used at that time was DK- 60 A. The images were detailed and sharp. We made Dye Transfer prints of this shooting session and produced extremely accurate and colorful images.

The client used this technique for two years and we



produced the covers for the cookie box in this fashion. We never shot a transparency.

If you are serious about this procedure and want to produce work in a studio, then ask Condit Mfg. for information about a camera back that he has in his arsenal of equipment that is fitted with register pins.

This would mean that your studio should have the capability of becoming a darkroom, so that the film and holders could be loaded between exposures.

If you want to shoot portraits, you would have to have the model hold the pose without blinking or breathing or else you will have an interesting portrait, to say the least.

When I owned and operated my large lab in Los Angeles, I was fortunate enough to own a Brown Commadore engravers camera.

This camera used 4 quartz lights at 600 watts ea. and a 30x40 copy board.

The copy board was equipped with back-lighting capabilities.

The camera back was 20x24 vacuum, in which I installed retractable 8x10 diagonal pins that matched

the rest of the pin systems in my lab.

I was able to place large paintings on the copy board, and size the image on the camera back to an 8x10 size.

This enabled me to first expose the principal masks through the base, on their own pin system (Kodak matrix punch) and then later, load the unexposed separation film on the diagonal pins, (small 1/16th in. Condit pins,) activate the vacuum, then retract the diagonal pins, place the masks on their own pins, and expose the separation negatives through the masks.

This system allowed me to accurately predict the results as the exposures and developing times were standardized.

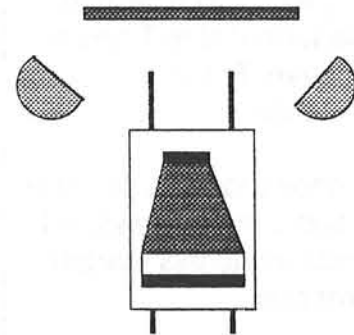
The prints we produced with this camera and negative making procedure produced some of the best "art copies" that I have ever seen.

One painting in particular was worth \$500,000. Our prints of this painting were sold for \$6,000 each.

I remember one situation very clearly. When I first began working with copying methods, I worked as an assistant camera man in

a commercial studio. The system consisted of an 8x10 view camera mounted on a waist high box, which in turn was mounted on a set of tracks, upon which were the wheels placed on the bottom of the box.

The art work was pinned to a cork wall. The lights were 500 watt photo floods mounted in a trough and aimed at the subject.



A simple, yet effective way to shoot copies of art work or other color prints. You should place a paper grey scale along the side or bottom of the art work so that you can properly attest the accuracy of your separation negatives or transparency.

Make sure that the surrounding area adjacent to the art work and wall are painted grey or a neutral color. Any hue will influence the overall color of the copy.

You will have to "invent" some method of preventing the assembly from moving.

In a recent conversation that I had with the Dye Transfer representative from Kodak, I was left with the impression that the long awaited book about Dye Transfer techniques will not be printed after all.

This is unfortunate. I had written an rather lengthy section of the book, as had Ctein, Dennis Brokaw, and Charles Swedlund. The introduction and the fine editing was accomplished by the former Dye Transfer dept. head, Frank McLaughlin.

This book promised to show the reader the many varied approaches to this wonderful process.

Tom Rankin, a former associate of mine, who is the present head Dye Transfer technician at the Frog Prince Labs in San Francisco, wrote a great article about making Dye Transfer color prints from color negatives via the production of black and white positives and then converting them back to separation negatives which will allow you to work with the conventional matrix film rather than the soon to be eliminated Pan matrix film.

This article has recently been edited by Ctein, a well know practitioner of the Dye Transfer process.

Kodak plans to produce this article as a phamplet and said that they would distribute it nationwide.

I understand that my new book and video on the Dye Transfer process will be mentioned in this phamplet. **Thanks.**

**Electronic retouching.**

Is it here to stay? Unfortunately for the retoucher, yes.

I recently taught a young student from Puerto Rico who wanted to know more about the field of photo composition.

Part of the time that he spent with me was the opportunity to visit two of the companies that are involved with this new technology.

The first place we visited was the G.P. Color Lab. in Los Angeles. They are currently using the Crosfield system that I once wrote about in an earlier edition of "Keeping Pace."

I was quite impressed with the system that they are using. The cost of this lower priced system however, was still quite high.

The system has the ability to do almost anything that a "hands on" retoucher could do.

The system is housed in a room that is especially cooled and begins with a film scanner. This unit will scan a transparency and place it on a reel of computer tape in 15 minutes. This system costs around \$200,000. Some scanners cost even more.

Then the reel of tape is loaded into the computer and the image then appears on the screen.

The operator then uses the many tools at his disposal to change or alter the image in any way imaginable.

When the "retouching" is complete, the image is "saved" onto another reel of computer tape.

This final image is then loaded into a film recorder and a new transparency is exposed. The image is a "one to one" reproduction of the original transparency except for the retouching.

Seeing all of this leaves one with the impression that eventually, any clever operator will be able to retouch with these machines and eventually replace the truly artistic retoucher.

Then we left G.P and visited with Alan Williams, probably the finest retoucher in the country.

This visit was also an eye opener. Alan was gracious enough to spend time with my student and went through the many "tricks" his machines could perform.

The system Alan uses is called Superset, a machine designed and built in the U.S.A. This is a more costly machine than the Crosfield.

Alan was able to perform many retouching tricks with this system. The best feature was the ability to actually create an illustration from scratch. We were all convinced that the systems are here to stay.

However, from a strictly commercial viewpoint, what is to prevent the advertising companies from installing their own machines and eliminating the retoucher, as we now know him, forever?

The answer is frightening.

How does all of this affect the average guy or gal that wants to produce his or her own work? Not at all.

If you want to make Cibachrome prints or Dye Transfer prints for any possible acceptance in the "art" community, then the scanners will not affect you at all. The only people that

will be affected are those hardy souls that want to compete with these new monsters.

I still feel there will always be a need for a competent color printer in the commercial field even if only because of the money factor.

These new machines are so expensive that the cost of using it's functions can cause some advertisers to shy away from using them.

The field of "quick prints" that may be used for layouts are also affected by these machines, because besides turning out a new transparency, they are also capable of producing a printed piece to almost any size using a jet ink system which is virtually grainless.

#### **Processing Ciba Prints with the new processors.**

The CAP-40 produced by Ilford is the best known processor for the Cibachrome process. It was specifically made for the new P-30 processing system.

The great thing about this processor is the fact that it requires no plumbing and can produce prints up to 16x20 with accuracy and repeatability. I constantly stress the fact that repeatability is the key in producing any kind of quality print.

Whenever problems arise I can assure you that somewhere in your processing or exposing system you will find the error.

The best feature of the CAP-40 is the fact that it uses the new P-30 chemistry. Any of the Cibachrome papers can be processed in this machine. The results are just great.

The chemistry is available in either powder or liquid form.

The powder form will allow you 17% greater processing capacity at 20% less cost.

#### **Cibachrome EM Exposure Monitor**

The Ilford company also sells a small analyzer for \$24.95. This may not be the "best" meter that you can buy, but this little jewel will allow you to pinpoint the correct exposure in seconds when changing from one image to another.

The amount of chemistry used in the system is only 2 liters, and is capable of producing 25 8x10 prints in one hour. This is a pretty good deal.

If you are making gallery quality prints and want to make a series of prints for a limited edition, this machine is great.

The disadvantage is that there is no provision for replenishment. You will have to dump the chemistry when the run is complete.

The next machine on the market is also produced by Ilford. This is called the **ICP 42 Cibachrome processor**.

This machine looks just like the CAP-40 except that it has a separate unit that unlike the CAP-40, will wash and dry the prints for you.

If you have a small business and want to compete with the big boys, this machine will allow you to do so within the confines of the 16x20 size.

**A bit more about generation loss.**

In the last issue I wrote about the curve shape of films and the expected loss of highlight and shadow caused by making copies of copies. Kodak has a very good solution to the copy problem.

They have recognized the fact that the loss is caused by the fact the curve shape keeps getting distorted every time a copy is made. They have introduced a new duplicating film called SO-339. It replaces their original B&W Duplicating Film 4168. The new film is able to produce a new negative with a contrast level very close to the original.

The film is also capable of long time storage. It can also be toned, if necessary.

Toning is sometimes used to increase the films ability to withstand time. This is a perfect medium for collectors or any other need for longevity.

If you are involved with the E-6 process, and you don't feel as if you want to attempt using the new B&W duplicating film, you can use Kodak Ektachrome duplicating film. It is more costlier, but if you are already set up for E-6, why not use it. However, forget about archival quality.

I hate to use products that I cannot control. Therefore, before I use any material for any final prints or negatives, I test it thoroughly before I commit myself to a procedure.

This is the result of being a Dye Transfer printer.

If any of you have any of my books you will notice that I make many charts and tests before I feel comfortable with any material.

If you are contemplating making Dye Transfer color prints, make sure that you make small test prints of your image before you commit yourself to the much higher cost of large sheets of matrix film.

**The new book on Cibachrome.**

My new book is about ready for printing. This is a complete and thorough instruction on the Cibachrome process. This is aimed at the advanced amateur or the professional printer.

I write primarily about masking in a professional way so that it is repeatable and consistent. I also write about the split masking method of improving the specific colors in the print.

Highlight correction is discussed and explained in great detail. And the ability to color correct using an isolation masking system is also explained.

The book will consist of actual Cibachrome pints on the cover and in the pages of the book.

The contributing photographers are Tom Kelley, Galen Rowell, Vern Clevenger and Keith Logan. I will notify all of you when I am ready for distribution.

In the meantime. I still have a book, "The Art of Photo Composition" for \$50, and a video and book on Dye Transfer for \$200.

Thanks,  
Bob Pace