

Three Color Gum – Taylor Made

By Lear Levin

Some might think that the complexities of the three color gum process are at odds with the efficiency of modern printing; passé, in an age where the click of a mouse can reveal often-breathtaking images rendered in seconds. However, for alternative printers who can handle the anxieties attendant to this process, the rewards can be extremely satisfying. The luster, depth, and textural richness of color can reflect the pallets of painters and Pictorialists or photo-realists. The process offers many options and, like precious stones, quality specimens are highly valued.

Keith Taylor is a diminutive, unpretentious, self-taught, expatriate Englishman who works out of his laboratory in Minneapolis, Minnesota. His superb technique has been perfected through extensive research, endless curiosity, imagination, strong convictions and thirty years of patient experimentation. Taylor's work in silver, platinum and gravure has garnered him great attention and many awards, but it is three color gum printing that has brought him his greatest distinction, and the high quality and consistency that he regularly achieves in this century-old medium are second to none.



Keith Taylor

Taylor's client list boasts well-known fine art photographers from all over the United States and the British Isles. However, it was his Minneapolis friend, Cy DeCrosse, that helped fire his interest in the three color gum process. DeCrosse was a successful publisher, photographer and TV commercial director, who turned to fine art photography and became fascinated by alternative forms of printing. Using his empirical skills with Platinum, Taylor crafted masterful prints for DeCrosse from images captured with the photographer's 4 x 5 Sinar X and Rollei 6008 cameras. When DeCrosse decided to switch exclusively to color for a new exhibit, he asked Keith to help him explore alternative forms of color printing – other than conventional Cibachrome or inkjet. He wanted his new work to look hand-made, painterly. He described his intention to photograph arrangements of fruit, classically presented against textured backgrounds and lighted to reflect the four seasons. He wanted his prints to be realistic looking and to be printed in full color, but at the same time, have the flavor of Pictorialism.



Examining the yellow separation negative.

Always eager to stretch his creative wings, Taylor began his research. Initially he considered gum printing as a good prospect, but promised to keep his mind open until he not only found the best color method for DeCrosse, but the most practical one. Taylor's knowledge of the gum process was limited to what he had read in film journals or seen displayed in museums by early master photographers like, Demancy, Maskell, Stieglitz, Steichen, Kuhn and Kasebier. He began analyzing the work of these pioneers as well as contemporary gum printers, gleaned tidbits from everyone who had ever spoken or published on the subject. Both Taylor and DeCrosse soon recognized that the Autochrome Process actually came closest to a full color version of the Pictorial style. It offered soft, impressionistic imagery and rich, vibrant color, but it was finally rejected due to its vast, unpredictable intricacies,

foreboding pitfalls and a dark statement Taylor came across warning, "this process is a merciless bitch far more daunting than weaving straw into gold."

The three color gum approach won by default, and Taylor, with DeCrosse's backing, leaped to the task. He familiarized himself with the production of separation negative files on his Mac, the dilution of dichromate sensitizers, pigments, the properties of gum Arabic, myriad watercolor papers, and the best method to shrink and re-size them. He worked in his laboratory well beyond midnight for months searching for the correct combination of pigment, gum and sensitizer that would deliver a perfect balance of color in each of the three layers essential in creating a realistic looking print. The old mantra of gum printers that proclaims, "the final step in gum is to take your print, turn it upside down, then drop it into the trash can," soon began to ring in his ears.

Traditional methods used for producing three color gum prints begin with pre-shrinking a sheet of watercolor paper so that multiple washings will not change the paper's size and throw the subsequent layers out of registration. The paper is dried and re-sized to keep the emulsion on top of the substrate, rather than sinking into the weave. Taylor, being a maverick, diverged from this accepted method and pursued instead a technique advocated by printing maven, Dick Sullivan. It required mounting the paper on a solid backing for the entire printing process – thus avoiding shrinkage and re-sizing. Sullivan had successfully practiced this concept with his own gum prints over four decades ago. He based it on a technique that he believes may have been first practiced by Pictorialist, Heinrich Kuhn. Following Sullivan's lead, Keith had thin sheets of Aluminum cut and pierced to hold his paper and seat registration pins. The pins gave him a classic way of keeping all his negatives in perfect registration.

For his paper, Taylor chose Fabriano Artistic, 140 pound, 300 gram, Soft Press. It is slightly textured and suggests a painter's canvass. He mounts his watercolor paper on its backing using a hot press and a single layer of Fusion 4000 tissue as its binder.

For the first layer of gum he prefers yellow. He places the thin-looking black and white separation negative (marked yellow) on the registration pins and indicates the corners of the image on his paper with a nearly invisible pencil dot. The print borders are created by masking the edges of the paper with soft-release painter's tape, using the dots as a guide.

Taylor was working large when I visited him in Minneapolis. The image that I watched him craft was 20 x 27 inches. It was one of ninety-three, three color gums, relatively similar in size, that he was printing for an exhibit DeCrosse will be mounting in Florence, Italy in October of 2009.



Coating the yellow layer.

Since Dichromate is toxic, Taylor begins the mixing and coating stage of the process by donning a pair of surgical gloves. He then squeezes 2 grams of Cadmium Yellow Light watercolor pigment into a glass dish placed on an electric scale. (The prints he was producing for DeCrosse demand large amounts of sensitized mixture, but the formula can be reduced proportionately for smaller images.) This first yellow layer is applied with an opaque pigment. The remaining two layers are created from transparent watercolors and, hopefully, will marry happily in colorful *ménage à trois*. If the opaque pigment were used as a second or third layer, the work would be ruined and unceremoniously dropped through a trap door into hell. With an eyedropper, Taylor draws 18 ml of Gum Arabic and adds it to the pigment. He mixes the two ingredients together thoroughly, then suction 24 ml of a 15 % solution of Potassium Dichromate into another dropper and floods the reddish-orange sensitizing fluid over the rue. Once the three elements are completely mixed, he dips a foam brush into the dish. Then, with his fingers, wrist and mind seemingly welded together, he coats the paper using deft, allegro strokes. The brushes are changed three times until the coating looks as smooth as breath on glass under the subdued incandescent light of his laboratory. The work is allowed to set for a minute before it receives a blast of warm air from a hair dryer. When he is sure that the emulsion has begun to congeal, the masking tape is removed and the virginal yellow layer, framed neatly by white borders, is placed into a drying cabinet.



Removing negative.

Taylor tested all the watercolor pigments that were readily available and settled upon those made by Daniel Smith. He buys his gum arabic from them too. He is also the first to insist that each printer must satisfy his or her own desires when it comes to preference in printing materials and devices.

Taylor slips a 2 mil sheet of clear polyester between the Yellow separation negative and the coated paper surface. This invisible barrier insures the longevity of negatives that might otherwise become diminished by continual sandwiching against emulsion-coated paper in his powerful plate burner. With the mounted package carefully sealed inside a vacuum frame, his five thousand watt plate burner is turned on and an integrator brings the ultraviolet light up to its proper, blinding level, in seconds. A dense neutralizing shield keeps harmful UV rays at bay while Taylor tidies up his workspace.

Because the sensitizing dichromate in gum work only reacts to Ultra Violet illumination, dim incandescent lights are allowed to remain on. This actually made me feel more like being in a laboratory environment than a darkroom. Taylor also finds the warmth of the lights comforting, especially during the long hours spent in his narrow confines. It keeps him from feeling like the subterranean creature that the darker world of the silver process often engenders. Comforting too is a cappuccino machine that dwells just beyond his doorway and a stereo that plays his favorite jazz or old radio programs from his native BBC.

Anticipating the end of the exposure, Taylor fills his stainless steel sink with water tempered to soak the print at seventy degrees – for smaller prints he uses conventional trays. After roughly two minutes the huge plate burner shuts down and a darkened outline, embossed on a field of yellow, is clearly visible on the paper's coating. The metal backing is turned over so that the print can gestate face down in the water bath. Its weight is supported from contact with the sink at the corners of its frame. Here, untouched, the exposed print will reside for thirty minutes until all the soluble, unexposed, coating drifts away and only those areas hardened by the penetration of the UV light remain.

At the conclusion of this first bath, Keith wafts the large aluminum frame from the water and slides it gently beneath a trickling faucet for a close inspection and final wash. Using a fresh foam brush, with only the weight of the tool itself pressing against the print's surface, he draws it gently across the wet, still soft emulsion in order to remove any loose residual coating.

At this point in the process, while flooding the emulsion with a gentle stream of water, shadow or highlight areas can be lightly brushed, if there is a need for additional reduction. After a few passes from the hair dryer to insure that the surface is setting, the print is once more placed in a drying cabinet.



Taping edges in preparation for the blue coat.

Taylor explained to me that the measurements for all the elements constituting the mixture for the magenta and the cyan layers, were the same as the yellow layer. (The reason for this will be outlined shortly.) Their exposures were also similar. Quinacridone Rose watercolor pigment is used for the magenta layer and Phthalo Blue red shade is applied as the final layer.

The consistency that is the cornerstone of Taylor's skill, could not have been possible were it not for his knowledge of computers – digital files are the method by which all his separation negatives are created. Yet even with all his wisdom and facility, his early efforts required many reprinted negatives from his imagesetter. Sometimes highlights became stained and densities between the various separations were to often out of balance. And this was a particular problem; it stained and bled over margins. And since it was the last layer to be applied, and always after hours of extensive preparation, the boom of British accented curse words could often be heard reverberating throughout modest Minneapolis.

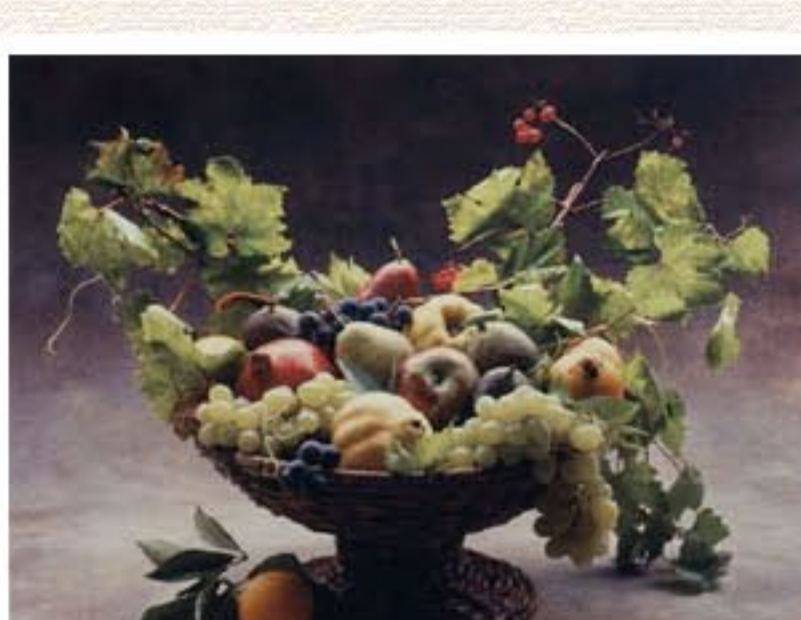


Finished print compared with monitor image..

In order to bring more predictability to his workflow, Taylor invited his friend Rick Haring to lend a hand. Rick is a well-known digital technician and color management expert popular with photographers and computer people around the Twin Cities. He was asked specifically to create a Color Profile for the creation of Taylor's separation negatives. Haring calls his approach: defining a color space, and it is similar to what he usually does for inkjet printers and monitors. He used a test target profile package to make an RGB profile, converted it to CMY and discarded the black or K channel. This approach was already familiar to Keith from reading materials published on the subject by Katherine Thayer, a formidable master of gum as well as other forms of alternative printing. An imagesetter subsequently created three separation negatives from the files that were generated. The resulting CMY color separations were printed by Taylor in three color gum. A full color grid pattern emerged and was meticulously analyzed by Haring. The profile that was created had to be tweaked several times until all the colors met Taylor's satisfaction. The introduction of Soft Proofing, however, struck Taylor as odd. It used the same profile devised for the CMY negative output, but when it was keyed up in Photoshop, the image that it presented was flat, milky. Doing all his final adjustments and trying to coax his image back to life while his screen was intentionally veiled, made Taylor feel like he was flying in a fog and had to rely solely on instrument readings to get home safely. Haring advised that as long as his densities and color readings remained in the same relationship to each other, as they had been prior to entering Soft Proofing, there would be a happy landing. "Soft Proofing," Haring reassured, "is just a way of giving you an approximation of how the final work will look on paper. Trust me." Taylor did trust Haring and a new consistency and predictability was eventually brought to his workflow.

Taylor edits his images on a Mac G5 in Photoshop CS3, in 16 bit, at 360 dpi, using Adobe RGB (1998) at a Gamma of 2.2, for his initial profile. After all his editing and sharpening is complete, the image goes into Soft Proofing where final tweaks are done. Then the file is duplicated and saved with all its layers. The original image is flattened, reduced to 8 bit and changed to 210 dpi. Then Haring's special profile is applied. The file is next placed into Multichannel and Split. The red channel is re-named cyan, the green channel becomes magenta, and the blue becomes yellow. (The black channel is discarded.) The new CMY files are saved as Tiffs. Finally, they are uploaded to the imagesetter, in Revere Graphics in Portland, Oregon. Taylor's instructions to Revere Graphics are to output the files at 2400 dpi, in CMY using a 105 lpi line screen, with the emulsion down and registration holes punched in each negative's margin.

Taylor's endless hours of work and careful craftsmanship are strikingly apparent as the final cyan layer of his latest print dries. The tonalities of the image are rich, the reds and browns seem burnished like mahogany by firelight. The yellows are redolent of brass while cooler hues haunt the shadows. Still mounted on aluminum, the work is heated at 200 degrees in the hot press. After the finished print is peeled from its backing, Taylor remounts it on a fresh sheet of Fabriano to insure its resilience. He holds it up to the light for inspection. He nods approvingly. The process is complete.



Caravaggio Harvest, by Cy DeCrosse.

Through trial and error, a thirst for knowledge and a little help from his friends, Taylor has mastered many and varied aspects of the of the photographic process, while more still wait in the wings of his imagination. Yet even with all his technical understanding it is still magic for him when an image on paper emerges from the developing tray into the light. His three color gum prints can hold up a mirror to the past or illustrate the shadow and substance of contemporary life. But more than anything they reflect the man's aesthetic and his dogged pursuit of perfection in the craft that he loves.