

San Francisco Rock Posters and the Art of Photo-Offset Lithography

ABSTRACT

Offset lithography was the dominant method of commercial printing of the twentieth century. This workhorse of printing, with its complicated equipment and production sequence, left very little room for artistic experimentation. It was during the nineteen sixties, in the small photo-offset lithographic shops of San Francisco, that commercial need and artistic vision came together in the creation of psychedelic rock posters.

These posters were created to promote music and dance venues featuring many of the greatest rock bands of the sixties. Working under tight deadlines, the artists broke every rule of conventional design, producing works that reflected the visual chaos and revolutionary spirit of the scene. Using sheet-fed offset presses, the small offset lithographic shops affordably produced runs of single-color and multicolored posters in a short period of time. However, unlike larger commercial shops, they were able to provide an environment that was conducive to artistic input.

This paper examines the process of photo-offset lithography within the context of the making of the early San Francisco rock posters (1966–1968). The materials and major steps of the production sequence for flat multicolor prints are discussed and illustrated with images of original artifacts.

INTRODUCTION

During the mid to late nineteen sixties, thousands of young people converged on the neighborhood of Haight-Ashbury in San Francisco to take part in a scene of cultural and political rebellion, the apex of which was the “Summer of Love” in 1967. Along with this emerging counter-culture was a growing music scene. Psychedelic dance concerts were held on a weekly basis at dancehalls including the Matrix, Winterland, and the famed Avalon Ballroom and Fillmore Auditorium. They

Presented at the Book and Paper Group Session, AIC’s 38th Annual Meeting, May 11–14, 2010, Milwaukee, Wisconsin.

featured some of the most iconic bands of the time including Jefferson Airplane, The Grateful Dead, The Doors, and Big Brother and the Holding Company. These dance concerts were absolute visual and auditory experiences, with elaborate light shows and colorful bubbling overhead projections.



Fig. 1. Stanley Mouse and Alton Kelley, FD-26, poster for the Grateful Dead and Oxford Circle, 1966. 50.8 x 35.5 cm. Fine Arts Museums of San Francisco, Achenbach Foundation for Graphic Arts, 1974.13.100. Image of skeleton and roses taken from *Rubāiyāt of Omar Khayyām* with illustrations by Edmund J. Sullivan

A series of posters and postcards were commissioned by the promoters of the venues to advertise the concerts¹. They were distributed at the dancehalls, poster stores, head shops, campuses, and various public places. The posters, designed by artists including Wes Wilson, Alton Kelley, Stanley Mouse, Victor Moscoso, and Rick Griffin, reflected the colors and visual chaos of the dance concerts, and the experimentation of the sixties counter-culture. The artists broke every rule of conventional design, creating works using distorted forms, unreadable lettering, unusual color combinations, and various collage elements (fig. 1). They drew inspiration from the mind-altering experience of psychotropic drugs, pop culture references, and art historical sources, in particular Art Nouveau.

Though a few of the posters were screen prints, the majority were made using the process of photo-offset lithography. They were printed at a number of small offset lithography shops in San Francisco including Rapid Repro, Cal Litho, Tea Lautrec, Bindweed, West Coast Litho, Contact Printing, Progressive Litho, and Double-H.

OFFSET LITHOGRAPHY

Offset lithography is a planographic process, meaning that the image area and non-image areas are on the same plane of the printing plate. It is based on the same fundamental principles of traditional lithography—oil and water do not mix. The offset lithographic printing plates are chemically prepared so that the non-image areas are receptive only to water, and the image areas are receptive only to ink.

The predominant mechanisms of an offset lithographic press are a series of rollers (fig. 2). There are three main types of rollers: the plate cylinder is a roller on which a flexible

printing plate is attached; the blanket cylinder or offset cylinder is a roller that is covered with a rubber blanket; and the impression cylinder is a roller that carries the paper sheet. There is also a series of smaller rollers that make up the dampening system and inking system.

With the offset lithographic process the printing plate is first wet up by the dampening system. The dampening rollers apply a thin film of water to the water-receptive non-image areas. When the ink is next applied, it is repelled by the film of water in the non-image areas, and attaches to the ink-receptive image areas of the plate.

The process is called “offset” lithography because the printing plate is never in direct contact with the sheet of paper; rather the inked image on the printing plate offsets onto the intermediate blanket cylinder. The inked image on the blanket cylinder is then transferred to the sheet of paper pulled through on the impression cylinder. The advantages of offset lithography are its high speed and the fact that the image is printed in the same orientation as that on the printing plate.

MULTICOLOR PRINTING

Multicolor prints were composed of two or more colors. This included black as a color. In the offset lithographic process there were two main methods of producing a multicolor print: process color and flat multicolor printing².

With process color, a continuous tone multicolor image was photographed through a series of color filters to create halftone printing plates for each primary color and black. When the plates were printed, the dots combined to reproduce the original full color image (fig. 3). This process was used for some of the later Fillmore posters.

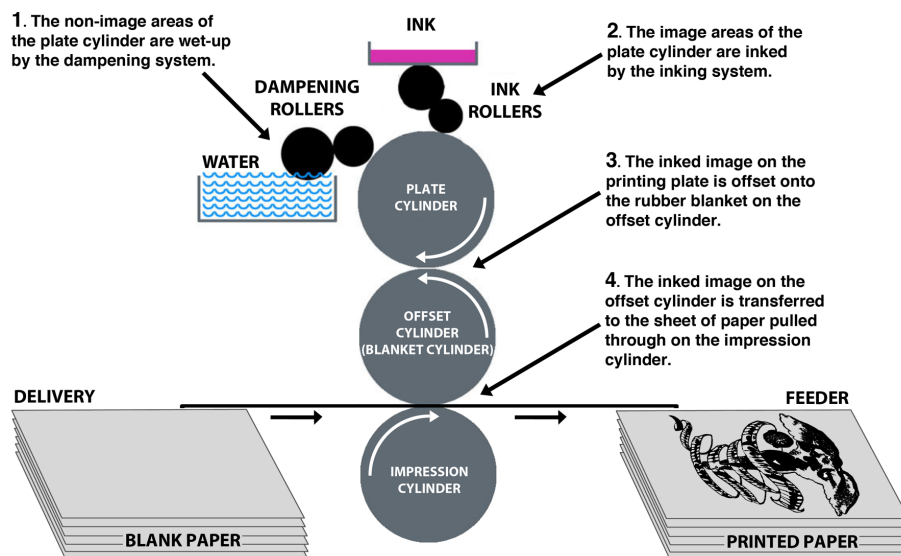


Fig. 2. Offset lithography



Fig. 3. Process color (left), detail (above). Randy Tuten, BG-165, poster for Janice Joplin, Aum, and Savoy Brown, 1969. 53.3 x 35.9 cm. Fine Arts Museums of San Francisco, Achenbach Foundation for Graphic Arts, 1972.53.253



Fig. 4. Flat multicolor printing (left), 10x magnification (above). Bonnie MacLean, BG-75, poster for The Doors, The Yardbirds, James Cotton Blues Band, and Richie Havens, 1967. 54.2 x 35.5 cm. Fine Arts Museums of San Francisco, Achenbach Foundation for Graphic Arts, 1972.53.103

The majority of the San Francisco rock posters from the period of 1966–68 were made using what is referred to as a flat multicolor printing process in which color was pre-separated in the design phase and a plate was made for each color. More colors could also be achieved by overlapping two printed colors. The appearance of flat multicolor prints was that of planes of solid color or solid dot patterns (fig. 4). The flat color process actually allowed for greater flexibility than process color, as the artists were not restricted to using just the primary colors and black.

PRE-PRESS WORK FOR FLAT MULTICOLOR PRINTING

Before the actual printing of the rock posters, there was what was known as the pre-press work, which was accomplished using a series of complex photomechanical techniques. Pre-press work began with design and layout done by the artist. The finished artwork, including illustrations and photographs, was assembled by the artist into what was termed a paste-up or mechanical. The cameraman photographed the finished paste-up, producing transparent film negatives and



Fig. 5. Felt tip marker sketch on paper. Robert Fried, FD-115, poster for Steppenwolf, Charley Musselwhite, 4th Way, Indian Head Band, 1968

positives. Next, the stripper assembled all the pieces of film necessary to make a printing plate. This was done by cutting and piecing the film together into what was known as a flat. Finally the platemaker exposed the prepared film on a sensitized printing plate, which was later developed³.

The following five sections gives a closer look at each of these pre-press steps within the context of the rock posters⁴.

Rough Layout

Sometimes the artists would start with a sketch or rough layout working out issues of proportion, positioning, and color (fig. 5). Often notes were added to specify such things as color or placement. Working from this rough sketch, the artist began to prepare all of the finished design elements for the mechanical.

The Paste-Up

The paste-up (or mechanical) was the technical name for the series of images that comprised the finished artwork, ready to be photographed⁵. There were many different ways of making a paste-up. However, all paste-ups for flat multi-color



Fig. 6. Paste-up with black ink on illustration board and acetate overlays. Robert Fried, FD-D14, poster for Canned Heat and Siegal Schwall, 1967



Fig. 7. Poster with dot pattern gradations made using screen tints on the paste-up (left), detail (above). Jim Blashfield, BG-83, poster for Electric Flag, Mother Earth, and LDM Spiritual Band, 1967. 53.3 x 35.8 cm. Fine Arts Museums of San Francisco, Achenbach Foundation for Graphic Arts, 1972.53.98



Fig. 8. Key-line mechanical. Black ink on illustration board (left), color pencil on tracing paper overlay (right). Wes Wilson, FD-88, poster for Van Morrison, Daily Flash, and Hair, 1967

printing had a way of clearly indicating or separating the design elements according to each color that was to be printed. The three methods primarily used to make the rock posters were acetate overlays, key-line mechanicals, and bluelines.

With acetate overlays, the artist executed the most complicated art, corresponding to a single color, on a smooth white illustration board. Then he placed designs representing other colors on their own acetate overlays (fig. 6). The colors in which the art was eventually to be printed were often indicated with color swatches or handwritten notes made by the artists. Registration marks were indicated on each separation for proper alignment.

Most of the design elements were made using black ink. Often artists used masking films such as screen tints and Rubylith[®]. Both of these were adhesive backed acetate films that could be cut into shapes and attached to the mechanical. The screen tints came in a variety of black patterns that gave the illusion of shading or patterns (fig. 7). Rubylith was a transparent red film that photographed the same as black design elements. The orthochromatic graphic arts film used to shoot the mechanicals did not distinguish between red and black.

With a key-line mechanical, black and white art was prepared on an illustration board. The color separations were indicated in colored pencil on a single overlap of tracing paper (fig. 8). This method required much more work from the camera operator and stripper. The illustration board mechanical had to be photographed several times, producing many positives and negatives, which were later cut apart and reassembled by the stripper for each color plate.

Blueline was a technical term for a photographic print on a surface of plastic, glass, metal or paper, typically yielding a blue image. In offset lithography, the blueline process could be used for proofing and alignment of the negatives. With the rock posters, the blueline method was often used to create paste-ups. With this method, the original drawing was



Fig. 9. Black ink drawing on illustration board (top), blueline print and black ink on illustration board (bottom). Rick Griffin, FD-79, poster for Big Brother & the Holding Company, Blue Cheer, and Eighth Penny Matter, 1967

photographed to make a negative. The resulting negative was then contact-printed on illustration boards or papers sensitized with diazo salt compounds to produce several blueline images. Then, working from these identical blueline images, the artist used black ink to demarcate the design elements corresponding to different colors (fig. 9). The beauty of the blueline is that when the paste-up is photographed, the blue is not recorded by the orthochromatic graphic arts film. Thus, the negatives produced showed only the design elements inked by the artist.

Camera Work

The finished mechanical and all its overlays were photographed individually on a copy stand. The mechanical was held in place at one end by a copyboard, and the film was inserted at the other end in a film holder. The film used to shoot the artwork was made especially for graphic arts production work. As the film was high-contrast, all



Fig. 10. Negative. Stanley Mouse and Alton Kelley, FD-30, poster for Big Brother & the Holding Company, and the Sir Douglas Quintet, 1966

continuous tone artwork, such as photographs and washes, were shot separately using halftone screens. The camera operator produced as many negatives and positives as needed by the stripper for the next stage of production (fig. 10).

Stripping

The film was assembled in preparation for making printing plates. Working on a light table, the stripper carefully cut apart the film positives and negatives, and placed the elements together to achieve the desired composition. The pieces of film were often attached to an opaque masking paper in which windows were cut out to reveal the parts to be exposed on the printing plate. This assemblage on the masking paper was called a flat (fig. 11). Any flaws in the negatives, such as pinholes and scratches, were corrected with an opaquing solution. Stripping was a very complicated process, and it could take many film assemblages and flats just to make one plate.

Platemaking

The plates used by the offset lithographic shops Tea Lautrec and Cal Litho consisted of an aluminum base pre-sensitized with a light sensitive material, typically a diazo compound (fig. 12). To make the plates, the negatives or flat



Fig. 11. Flat. Front showing windows cut out of opaque masking paper revealing negatives (left), back of flat showing cut pieces of negatives taped together (right). Jack Hatfield, poster for Quicksilver Messenger Service, Ace of Cups, and Cranberry Frost, 1967



Fig. 12. Printing plate. Stanley Mouse and Alton Kelley, FD-30, poster for Big Brother & the Holding Company, and Sir Douglas Quintet, 1966

was placed in direct contact to the sensitized surface (emulsion to emulsion) and secured in a vacuum frame. The plate and the negatives were then exposed to a light source with strong ultraviolet output. The exposed image areas of the light sensitive surface were hardened and the unexposed material was removed during development. After rinsing, the plates were ready for printing.

PRINTING INKS

There were many manufacturers that produced offset lithographic inks during this period, including the companies Van Son, Gans, Flint, Handschy, and Cal Inks. The offset

lithographic inks used for sheet-fed presses generally consisted of colorants in oil and resin based vehicles with various modifiers including driers, plasticizers, waxes, chelating agents, surfactants, antioxidants, and defoamers. The inks were tacky with a paste-like consistency. During printing the force of the rollers increased the fluidity of the inks and dispersibility of the pigments, creating a film 0.8–1.1 micrometers thick on the surface of the paper (Herbst and Hunger 2004). As the film was very thin and generally transparent, it was important that the pigments had a strong color strength and fine particle size.

At the Museum of Fine Arts, Boston, samples of printing inks from seven rock posters were analyzed using Raman spectroscopy⁷. The majority of the colorants identified were synthetic organic pigments. Frequently occurring colorants were diarylide yellows, beta-oxynaphthoic acid calcium and barium reds, and copper phthalocyanine blues.

PAPER

The papers on which the posters were printed are variously described as index, bristol, vellum, or tag. In general, the rock posters were printed on a sturdy, fairly thick paper stock, which appears to be composed of primarily chemical wood pulp. Most of the posters made between 1966 and 1968 were printed on uncoated papers. Surfaces ranged from an even and slightly porous vellum finish, to a dense, smooth machine finish (APPA, 202). Coated papers were used with greater frequency from 1969 onwards. Many, but not all, of the papers were made using optical brighteners.

The earlier posters were printed one at a time. Subsequent posters were usually printed on larger sheets of paper either two posters at a time, or one poster with several postcards or tickets on the same sheet of paper. The posters, postcards, and tickets were then cut to size after printing. Most of the posters made for the Avalon Ballroom measured approximately 20 x 14 inches. Fillmore Auditorium posters typically had slightly larger measurements. Variations in papers and dimensions were no doubt due to affordability and availability of the paper, and the size of the press⁸.

PRINTING

The majority of the rock posters were printed using small one-color sheet-fed offset lithographic presses. As the name “sheet-fed” suggests, individual sheets of paper, usually in large stacks, were pulled rapidly through the press one at a time. As the presses used to print the rock posters were only one color, it was necessary to run the sheets through the press several times to achieve multiple color prints.

A printer had to have a good understanding of the complexities of the press to keep it running smoothly. Some of the many tasks of the pressman included adjusting the paper

feeder and delivery system, attaching the plates and the blanket, and positioning the rollers. Maintenance of the inking and dampening systems required special attention in order to avoid a variety of issues such as emulsification of the ink and water, and off-set of the ink onto the non-printed areas.

The offset lithographic company Tea Lautrec printed many of the posters for the Fillmore Auditorium concert venues. Owned and operated by Levon Mosgofian, Tea Lautrec was staffed with two printers, Joseph Buchwald and Monroe Schwartz. Joseph Buchwald still lives in San Francisco, and was able to provide valuable insight into what it was like printing the rock posters.

At Tea Lautrec a one-color thirty-six inch Miehle sheet-feed press was used to print the rock posters⁹. The shop typically did one or more rock poster jobs a week, and about 500 to 5000 posters per job¹⁰. According to Buchwald, to run one thousand sheets through the press took approximately fifteen minutes, and required about one pound of ink or more. At Tea Lautrec, all colors for the rock posters were printed in one day. Each print run was given approximately forty-five minutes to one hour drying time before the next printing. This period is what Buchwald refers to as the “make ready” time, in which the press was cleaned, a new plate attached, and new ink added. By this time, the prints would be dry enough to run through a second time, though the inks were not completely dry for a good twelve hours after printing.

ARTISTS AND PRINTING

What made Tea Lautrec and the other small offset lithographic companies so unique was the willingness of the printers to work one-on-one with the artists, often at the press, helping them to achieve their visions including unconventional color combinations. The rock poster artists were all involved in the printing process to varying degrees. Some were more demanding, and some more hands-off. Likewise the printers showed varying degrees of flexibility. Deadlines were tight for both the printers and the artists. Often it was a push-and-pull negotiation. But everyone, it seemed, knew that they were on to something unique and meaningful. As the rock poster artist Bob Fried reflected in his interview in *The Art of Rock*, “I saw it as a throwback to Lautrec’s time, what with the artists and printers working together, the people in the audience and the bands on stage serving as weekly inspiration, the costumed people in the street, and colors, colors, colors everywhere.” (Grushkin 1999)

The rock poster artist Wes Wilson is often attributed with developing the psychedelic style with his fluid lettering and bold color choices. A self-trained artist, Wilson started his career working at Contact Printing with Bob Carr. This first-hand experience with offset lithography equipped him with the skills to understand the limitations and the potential of the press when working with various printers on his subsequent

rock posters for both the Avalon Ballroom and the Fillmore Auditorium. A number of his designs for the Fillmore Auditorium were printed at West Coast Litho, including posters that exhibited blended rainbow backgrounds. These rainbow backgrounds were achieved using what is known as the “split fountain” or “rainbow fountain” technique. By placing several colors next to each other in the ink fountain, a blended effect could be achieved when the sheet of paper was run through the press. Wilson described the experience of printing these posters as a collaborative effort with the printer Ivor Powell. Working together, they made adjustments to the press to create variations in effects from thin bands of color to smooth, wide, gradations (fig. 13).

The rock poster artist Stanley Mouse started drawing at an early age. He studied at the Detroit Society for Arts and Craft, but developed his true style creating monster and hotrod art for car shows and mail orders. After moving to San Francisco, he worked independently as well as jointly with the artist Alton Kelley designing many of the rock posters for the Avalon Ballroom and Fillmore Auditorium. Mouse thoughtfully pointed out that using a one-color lithographic press was very similar to the process of silk screening. Printing one color at a time allowed for greater control and experimentation, which could not be achieved by the confines of process color or multicolor presses. Indeed the versatility afforded by the one-color press was reflected in the artistic range of Mouse and Kelley’s posters, from subtle and elegant hues to wildly colorful combinations. They also experimented with metallic inks and the split fountain technique just described (fig. 14).

At the offset lithographic shop Tea Lautrec, Levon Mosgofian and his printers were known for working closely with the artists and helping them to translate their vision into print, particularly with regard to color selection. Getting just the right ink mixtures and color combinations was a crucial component in the dynamics of a rock poster. As the printer Joseph Buchwald recalls, the artists were usually present for the initial printing. Rough color choices were typically made from ink manufacturers’ color books. Unless the artists picked a straight color that was already available in a can, the inks had to be mixed by eye on the spot. As Mr. Buchwald explained, it would not be worth buying a five-pound can of ink for every color they were going to print. With the artist present, the ink mixture would be tapped on a piece of paper to give a better idea of how the inks would appear when they were printed. With the artist’s approval the printing would begin. Artist Stanley Mouse acknowledges that getting the right color combinations was often a matter of guesswork and pushing the printers to their limits. Likewise, Buchwald noted that the artists were sometimes striving for the impossible, and that there was only so much color that could be laid down before it started “messing up or off-setting”.

The rock poster artist best known for exploiting color combinations was Victor Moscoso. Moscoso came to San



LEFT TO RIGHT

Fig. 13. Rainbow fountain inking technique. Wes Wilson, BG-56, poster for Moby Grape, Chamber Brothers, and Charlatans, 1967. 53 x 34.9 cm. Fine Arts Museums of San Francisco, Achenbach Foundation for Graphic Arts, 1972.53.80

Fig. 14. Metallic inks used in silver colored background. Stanley Mouse and Alton Kelley, FD-17, poster for Jefferson Airplane and Great Society, 1966. 50.8 x 36.1 cm. Fine Arts Museums of San Francisco, Achenbach Foundation for Graphic Arts, 1974.13.43

Fig. 15. Poster made to be shown with changing colored lights. Victor Moscoso, FD-61, poster for Doors and Sparrows, 1967. 50.9 x 35.6 cm. Fine Arts Museums of San Francisco, Achenbach Foundation for Graphic Arts, 1974.13.18

Francisco with a strong background in graphic arts. He attended both Cooper Union and Yale University, and later received his masters at the San Francisco Art Institute, where he also taught lithography. Many of his rock posters exhibited wild vibrational effects achieved through his adept manipulation of color combinations, the concepts of which he learned while studying color theory under Joseph Albers at Yale. Using standard color printing inks, Moscoso would juxtapose complementary colors to create a popping effect, making it difficult for the eye to focus on one color at a time. This technique was used by many of the artists, but was perfected by Moscoso, with attention paid to the subtleties of value and brightness.

Some of Victor Moscoso's most inventive posters exploited standard colors to give the illusion of animation when viewed under alternating colored lights. With a 1967 poster he executed for The Doors concert at the Avalon Ballroom, he overlapped blue, yellow, and red images of a dancer in a flowing costume taken from a Thomas Edison film (fig. 15). When lights of alternating blue and red were flashed on the poster, the corresponding light canceled out either the blue or red, giving the effect of animation. Moscoso is the first to admit that the realization of this effect was not deliberate. As the story goes, a friend hung such a poster under flickering

Christmas lights and noticed that the image appeared to be moving. Moscoso is also quick to point out that it was an accident only once, and with similar posters that followed the effect was quite intentional.

THE QUESTION OF DAYLIGHT FLUORESCENT COLORANTS

It is easy to assume that the rock posters were made using daylight fluorescent colorants, typically known by the commercial name Day-Glo¹¹. However, Wes Wilson and Victor Moscoso both adamantly stated that they did not use Day-Glo inks. Nor did they even use small amounts to brighten standard printing inks. Stanley Mouse stated that he did not use Day-Glo either, with the exception of one poster and one handbill. All of the artists emphasized that the popping color so typically associated with their rock posters was due to color juxtapositions of standard printing inks.

During the course of this research, hundreds of Fillmore, Avalon, and Neon Rose rock posters and postcards in the collections at the Museum of Fine Arts, Boston and the Fine Arts Museums of San Francisco were examined under both normal illumination and long wavelength ultraviolet radiation. Of these hundreds of posters only two exhibited the

typical luminous color and bright fluorescence associated with daylight fluorescent colorants. These were the two prints noted by Stanley Mouse.

While further confirmation via a reflectance spectrophotometer needs to be done, it makes sense that the artists did not use inks containing daylight fluorescent colorants in the creation of the rock posters. Day-Glo offset lithographic inks (as opposed to screen printing inks) were very thin and not easy to work with. They often required two runs through the press, which was both time consuming and economically unfeasible.

CONCLUSION

No one can doubt the impact of the San Francisco rock posters on our cultural and historical psyche. They represent an energetic and rebellious period of creativity and collaboration comparable to that of the French Art Nouveau posters. Whereas these historical predecessors are only available to us through the texts and the art that remains, the rock posters hover on the edge of our contemporary world. The complicated photomechanical techniques and sophisticated color manipulations used to make the rock posters are the antecedents of contemporary graphics editing programs, such as Adobe Photoshop and Illustrator, used in offset lithography today. The artists and the printers of the rock posters pushed the capabilities of offset lithography, and in the process defined a cultural period.

ACKNOWLEDGEMENTS

Special thanks to Damon Beale, Joseph Buchwald, Lee Conklin, Phil Cushway, Michele Derrick, Debra Evans, Eugene Farrell, Christina Finlayson, Joseph Forloney, David Lance Goines, Alison Luxner, Annette Manick, Claire W. and Richard P. Morse, Justo Moscoso, Victor Moscoso, Patrick Murphy, Stanley Mouse, Katrina Newbury, Richard Newman, Doug Nishimura, Jim Northrup, Roy Perkinson, Sarah Riley, David Singer, Gregory D. Smith, Paul Whitmore, Wes Wilson, and the FAIC Christa Gaehde Fund.

NOTES

1. The Family Dog, a collective lead by Chet Helms, organized venues for the Avalon Ballroom. The numbered series of Family Dog Posters dating between 1966 and 1968 were designated by the Family Dog with the prefix FD printed in the bottom margin. Other venues under the umbrella of the Family Dog include Denver, Colorado (designated with FDD), and the Great Highway in San Francisco. There were approximately one hundred-and-fifty San Francisco posters produced by the Family Dog with the addition of thirteen Denver posters.

Bill Graham opened the Fillmore Auditorium in 1966. In 1968 the Fillmore was moved to a new location in San Francisco and renamed

Fillmore West. There were many other venues with events produced by Bill Graham. Some of these include Fillmore East in New York City, the Winterland Theatre in San Francisco, the Oakland Coliseum, and the San Francisco International Sports Arena. Numbered Bill Graham posters dating between 1966 and 1973 were designated by Graham with the prefix BG printed in the bottom margin. There are approximately three hundred posters in this series.

The Neon Rose series of posters was published independently by Victor Moscoso. The posters were primarily produced for The Matrix club. Numbered posters from Neon Rose were designated by Victor Moscoso with the prefix NR in the bottom margin. There are approximately twenty-seven posters in this series.

2. Other names for process color in which full color images were reproduced include full-color process and four-color process. The flat multicolor process is also referred to as spot color.

3. As many of the offset lithography shops that made the rock posters were very small, the pre-press steps such as photography and stripping were sometimes outsourced to trade shops.

4. Original printing artifacts including docketts, paste-ups, negatives, flats, and printing plates were provided by Phil Cushway at Art Rock, San Francisco, California.

5. Paste-up or mechanical is the technical term used in offset lithography manuals. The rock poster artists interviewed preferred the term artwork.

6. Rubylith is a brand name for transparent red masking films manufactured by the Ulano Corporation. Commercial names for screen tints include Letratone, Zip-A-Tone, and Chart-Pak.

7. Raman Spectroscopy was conducted with the Bruker Optics Senterra dispersive microscope using a 785 nm laser and a 50x objective for an analytical spot size of 2 microns.

Rock posters analyzed were donated by Jim Northrup from Sixties Posters, Inc. Posters analyzed included FD-2 by Wes Wilson and Chet Helms, FD-9 by Wes Wilson, FD-63 by Rick Griffin, FD-114 by Jaxon, BG-13 by Wes Wilson, BG/FE-5 by David Byrd, and NR-17 by Victor Moscoso.

8. Several of the original printing docketts from Tea Lautrec list paper type ordered. These include a 22.5 x 28.5 inch basis 125 Springhill tag purchased in 1967; a 22.5 x 28.5 inch 125 basis ivory Springhill vellum bristol purchased in 1968; and 22.5 x 28.5 inch 184M Foldecut purchased in 1968.

9. The inches associated with an offset lithographic press refers to the largest paper dimension that can be run through the press.

10. Numbers for print runs are based on printing docketts from Tea Lautrec.

11. Daylight fluorescent products available during this period include Day-Glo manufactured by Day-Glo Color Corporation, and Rad-Glo manufactured by Radiant Color N.V.

With the success of the San Francisco rock posters came a proliferation of posters imitating this new style. Within this growing market there were many posters, mostly screen prints, which were made using inks with daylight fluorescent colorants.

REFERENCES

- American Paper and Pulp Association (APPA). 1965. *Dictionary of paper*, 3rd ed. 202.
- Buchwald, Joseph. 2008. Personal communication.
- Conklin, Lee. 2009. Personal communication.
- Cushway, Phil. 2010. Personal communication. Art Rock, San Francisco, Calif.
- Eckstein, A. and B. Stone. 1965. *Preparing art for printing*. New York: Reinhold Publishing Co.
- Ellis, M.H., C.W. McGlinchey, and E. Chao. 2002. Daylight fluorescent colorants in artistic media. In *The broad spectrum: studies in the materials, techniques, and conservation of color on paper*, ed. H.K. Stratis and B. Salvesen. London: Achetype Publications. 160–66.
- Goines, David Lance. 2009. Personal communication. St. Hieronymus Press, Berkeley, Calif.
- Grushkin, P.D. 1999. *The art of rock: posters from presley to punk*. New York: Abbeville Press.
- Herbst, W. and K. Hunger. 2004. *Industrial organic pigments: production, properties, applications*, 3rd ed. Weinheim, Germany: Wiley-VCH.
- King, E. 1996. *Eric king's collector's guide to psychedelic rock concert posters, postcards and handbills 1965 to 1973*. Berkeley: Svaha Press.
- Lemke, G., and J. Kastor. 1997. *The art of the fillmore: the poster series 1966–1971*. Petaluma: Acid Test Productions.
- Moscoso, Victor. 2009. Personal Communication.
- Mouse, Stanley. 2010. Personal Communication.
- Shapiro, C. 1974. *The lithographers manual*, 5th ed. Pittsburgh: Graphic Arts Foundation, Inc.
- Singer, David. 2009. Personal Communication.
- Whitmore, P.M., S.A. Connors-Rowe, and H.R. Morris. 2005. Evaluation of appearance and fading of daylight fluorescent watercolors. *Journal of the American Institute for Conservation* 44: 75–94.
- Willems, W. R. 1963. *Paper and paperboard: characteristics, nomenclature, and significance of tests*, 3rd ed. Baltimore: American Society for Testing and Materials.
- Wilson, Wes. Personal Communication. 2010.

VICTORIA A. BINDER

Assistant Paper Conservator

Fine Arts Museums of San Francisco, Legion of Honor

San Francisco, CA

vbinder@famsf.org