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The production of images using photographic equipment and serigraphy

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The production of images using photographic equipment and serigraphy

by

Charles Roger Banks

A Thesis Submitted to the Graduate Faculty in Partial Fulfillment of The Requirements for the Degree of MASTER OF ARTS

Department:  Applied Art
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### TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>EPITOME OF PHOTOGRAPHY</td>
<td>2</td>
</tr>
<tr>
<td>EPITOME OF SERIGRAPHY</td>
<td>8</td>
</tr>
<tr>
<td>THE INDIVIDUAL IMAGE ELEMENTS PRODUCED USING PHOTOGRAPHIC EQUIPMENT</td>
<td>14</td>
</tr>
<tr>
<td>INDIVIDUAL IMAGE ELEMENTS PRODUCED BY SERIGRAPHY</td>
<td>32</td>
</tr>
<tr>
<td>THE CREATIVE COMBINATION OF THE INDIVIDUAL IMAGE ELEMENTS</td>
<td>35</td>
</tr>
<tr>
<td>THE CREATIVE PIECES</td>
<td>36</td>
</tr>
<tr>
<td>SUMMARY</td>
<td>46a</td>
</tr>
<tr>
<td>SELECTED BIBLIOGRAPHY</td>
<td>47</td>
</tr>
<tr>
<td>GLOSSARY</td>
<td>48</td>
</tr>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>49</td>
</tr>
</tbody>
</table>
INTRODUCTION

This study was undertaken to investigate the character of visual images created by combining individual image elements produced using specific photographic equipment and serigraphy. The processes of photography and serigraphy were used as tools to produce the individual image elements. Original photographic images were recorded, then varied and manipulated throughout the study. The individual image elements produced using the photographic equipment were high-contrast in character. These image elements were then combined with individual image elements produced using serigraphy. These two groups of image elements became the determinants of ten final visual pieces. There are ten color slides that accompany this study to illustrate the range and extent of the creative combination of these image elements.

For the purpose of this study two initial assumptions were made. They are that the reader has a knowledge of the production of a photographic negative and an understanding of serigraphy.

The use of wildlife and related objects as subject matter throughout the study served as a limiting factor. The use of water-based screen printing inks limited the range of the screen printed image elements. The photographic image elements were limited in size by the size of film that was used.
Photography is essentially a process of recording light. This record of light can be a representation of a real object. This representation for visual purposes is an image of that real object. The derivatives of the process, photographs or photographic images, have been often treated with less regard as an art and looked upon as a by-product of technology and commerce. "No art history written by a responsible scholar discusses photography until the 1960s" (5, p. 3).

This is not surprising, however. The history of art covers several thousand years and the process of photography has existed for less than two hundred of those years. This existence has come very recently in historical perspective.

In Paris, France, about 1810, a man who understood the principles of light responded to a new found social need. The man was Louis Jacques Mandé Daguerre. The social need was for a kind of entertainment for the people. In this decade of the 1800s he created a theater of light and illusion. This theater was the primitive forerunner of the motion picture theaters of today. Daguerre's display of light and illusion was called Diorama. Coinciding with his work on the Diorama were his experiments with a process based on the camera obscura.

Camera obscura actually means a dark room. In an early stage camera obscura was a room with a small round hole in one wall. This provided for a sunlighted setting to be visible on the wall opposite the round opening. There were two limiting factors in working with the
image projected in this manner. The image which was projected on the wall was inverted and the duration of working with the image was dependent on the source of light. Because the source of light was the sun it could not be predicted how long the image would remain visible. It was later determined that a box formed by six planes could be substituted for the darkened room. The small round hole was positioned opposite the missing end of the box. The versatility of the box allowed for a motionless sunlighted setting to be projected on almost any surface. The clarity and tonal qualities of the setting were found to be greatly improved when a curved piece of glass was added to the open end of the box. This lens helped to bring together the rays of light which formed the image.

Daguerre, in 1822, was trying to retain the tonal qualities of the settings he viewed through the camera obscura. He thought this would enhance the properties of the Diorama. He was only partially successful because of the dependence on the sun as a source of light. By 1826 Daguerre learned of the work being done by another Frenchman.

The work of Nicéphore Niépce was very closely paralleling that of Daguerre. These two men were attempting to produce a degree of permanence in the images they saw through the camera obscura. Their desire was to retain or fix the image on a surface. In the event they were able to achieve this, the image could be maintained for future use.

There were many communication problems between Daguerre and Niépce. The men met in 1827 but soon returned to their individual experiments. In 1833 Niépce died. By continuing his work Daguerre made significant
advances toward a working system. "By 1835 Daguerre had the basic system of his photographic process complete" (5, p. 22). The surface Daguerre chose to project his image on was a piece of thin copper. Working in a darkened studio he proceeded to make the copper reactive with sunlight. "Daguerre's process was to coat a copper plate with silver and then make the silver photosensitive with iodine fumes" (5, p. 33). When the iodine was heated and the copper plate was passed over it the fumes that rose further coated the plate. This light sensitive plate was then used with the camera obscura. In order that an image be recorded on the plate it needed to be exposed to the source of light. When sunlight was allowed to pass through the opening in the camera obscura it came in contact with the light sensitive plate. The exposure often took from a few minutes to over 40 minutes.

After this light sensitive silver compound was exposed in the camera it was developed over heated mercury; the fumes of the metal bonded to the silver surface in proportion to the amount of exposure. (5, p. 23)

The development or a noticeable change in the surface was observed when the metals interacted and darkened. An image was now recognizable. It was a positive line and tonal image representing the original setting. Now that the image was developed it was necessary to prevent it from becoming continually darker or overdeveloped. The chemical activity was superefficient because the silver iodine continued to react with the mercury. The easiest way to stop the reaction was to remove the remaining silver iodine from the plate. A chemist, Sir John Herschel, had a useful suggestion. "The idea was to wash the plate with hyposulfite soda" (5, p. 23). This stopped the chemical reaction and fixed the
image. The image received the long-sought permanence. Herschel also gave a name to the total process of making these images. He called the process photography. The process was rapidly becoming more common and there were many people who wished to make improvements on the process.

William Henry Fox-Talbot, a contemporary of Daguerre saw the need to improve the surface that received the image. In 1841 he found that the image formed on paper coated with silver iodine could be developed with gallic acid and silver nitrate. The result was a negative image on a piece of paper. This was much different from Daguerre's positive images. Fox-Talbot could make positive copies from these negatives, however. The quality of these images did not compare to the one-of-a-kind images made by Daguerre. Through research, other sensitized surfaces were found that could be used.

A cousin of Nicéphore Niépce, Claude Felix Abel Niépce de Saint Victor, was one of the first to successfully produce a negative image on a piece of glass.

After the superiority of glass as a support for the sensitive layer in place of paper and metal was definitely established, the next problem to be solved was to find a suitable vehicle to serve as a binder of the light sensitive silver salts to the transparent support. (11, p. 26)

Gustav Le Gray, an artist with an interest in photography suggested using collodion, a solution of gun cotton in alcohol and ether as a binder. This improvement was soon to be called the wet collodion process.

During the wet collodion period the light-sensitive material had to be prepared just before exposure and had to be processed immediately after it; this required a darkroom wherever the work was to be done. (11, p. 27)
This process had its drawbacks and soon was replaced with what was known as the dry collodion plate.

The dry collodion plate provided for a greater stability of the light-sensitive material because it did not need to be processed immediately. Many photographers around the world, in the late 1850s, used this dry plate process. It was not until the introduction of gelatin as a vehicle binder that the collodion plates became a truly desirable surface.

"In 1884, George Eastman invented paper roll films" (11, p. 31). The weight and fragile nature of glass could now be avoided. The sensitivity of this kind of film was many times greater than that of the copper plate used by Daguerre in 1839. The paper film made it possible to use materials which were far more versatile than the light-sensitive glass. The next development was to manufacture a film that was both flexible and durable.

A transparent collodion film was marketed by George Eastman about the turn of the century. Eastman also sold a camera that used this kind of film. Eastman's major contributions to the process of photography continued until 1932 when he died. The Kodak Company introduced a color film in 1935. Improvements on the process of photography continue today.

As early as 1810 the process of photography was used as a tool. The concept then was to represent a real object by recording light. The image elements created and used in this study also have their basis in this concept of initially recording light to represent an object.
The record of light then was manipulated to create individual image elements. These image elements were then creatively combined with image elements produced by using serigraphy.
Serigraphy is a printing process. The origin of this process has, by some writers been attributed to the ancient Chinese, others credit it's development to the Egyptians, but definite evidence cannot be found to substantiate either of these suppositions. (3, p. 1)

In fact, archeological findings strongly suggest that many of the images that are found in the caves of primitive man were done by employing a means of stenciling. Stenciling simply means that a material is used to block-out or cover-up an area of a surface so that when a pigment is applied to the surface some of the surface will receive pigment and others will not. The process of serigraphy is a close relative of the primitive process of making stencils.

Serigraphy involves ink which when applied to a surface passes through a fabric. There are areas of this surface that receive pigment and others that do not. This implies that there must be a provision for a stencil or a block-out so that only the desired image will result.

At some point in history the need was recognized that if a repeated motif is to be achieved there must be a way devised to hold the stencil in a nonmoving position. This was to insure that when the ink was applied to the surface the stencil would not move and thus alter the repeat. "A layer of hair was laid in a crosscross fashion between the two stencils and the whole permanently lacquered together" (3, p. 2). In this way the delicate parts of the stencil pattern were held in place. The Japanese who are most widely given credit for developing this way
of holding the stencil in place. This method of supporting the stencil was soon replaced with one yielding greater support and permanence.

This new system consisted of a fabric or silk cloth that was stretched taut across a bracing frame. The silk cloth served the same purpose the hair had previously. The Japanese became very proficient in using this system for printing images.

When European trade with the Orient became more commonplace so did this process of printing. "Stencil craft thrived even during the dark period of the Middle Ages" (2, p. 9). In the 1500s the stencil block-outs supported by silk cloth were also used with brush painting and wood blocks for printing. The history of the process follows many directions during the 17th century. France, Germany, and England all took a share in using the process. For example, in England,

When flocked wall paper was at the height of fashion, stencils were employed to apply the adhesive to the paper. (2, p. 9)

In France, at the beginning of the 18th century John Papillon, the father of wall paper had established a thriving enterprise for the design and printing of wall paper by the stencil method. (2, p. 10)

It was also believed that in Colonial America, a form of printing designs on furniture used a stencil which was supported on a cloth fabric. The process seemed to struggle for a time with few progressive additions.

It is known, however, that a patent was granted in England in 1907 to Samuel Simon of Manchester, covering the process as we know it today except that Simon used a brush instead of a squeegee to force the paint through the silk. (3, p. 3)

Soon after this patent, the process appeared in America strong in its will to succeed as a printing process. The process was a commercial
one not a fine art.

In about 1914 or 1915 a multi-color process was developed by a commercial artist named John Pilsworth of San Francisco, who improved the stencil process then in use for printing banners and pennants by permanently attaching the stencil to a piece of silk. (3, p. 3)

In only a few hundred years a primitive stencil system has matured into a much improved process.

I think it has benefit to list some of the names which appeared on the record of the Screen Printing Association which was in existence about 1910.

They are: Charles Peters, John Pilsworth, Howard W. Parmele, Bert Zahn, George W. Reinke, John W. Key, and others. (9, Preface)

In America, by 1915, the process of stencil printing or silk screen printing did have a following. This following was for the most part those who saw the process for only its commercial value. However, there was a small group that saw the potential of the new multicolor process and its application to the area of fine art expression. "As a fine art medium, the screen printing process (or serigraphy as it was later to be called) is incontrovertibility of American origin" (2, p. 13). The use of this medium in art expression had its start in the Depression years of the 1930s. It was at this time that a group of artists met with the Works Project Administration (WPA) and proposed the idea of forming a section to work with screen process printing. This unit was to come under one of the Federal Government's funded art projects (about 1936). Their request was granted and through government support and under the able leadership of Anthony Velonis, a painter and graphic
artist the unit was established.

By 1938, two years after the unit was formed, there was already significant public interest in screen printing as a fine art medium and the first one-man show was held at the contemporary Art Gallery in New York. (2, p. 13)

There were many artists to follow the precedent of exhibiting work done using this new found art form. Some of them were: Edward Landon, Elisabeth Olds, Robert Gwathmey, Harry Gottlieb, and Harry Sternberg (6, p. 8). It was interesting to note that these and other artists faced this art form so enthusiastically even after it had been on the American scene for thirty years. One reason for this time lapse of thirty years was the unfavorable reviews of the art form by the contemporary art critics.

The images obtained from this process of screen printing were not as well-received by the art critics of the time as they were by the artists and the general public. There were two historians who did rally around these artists, however. Carl Zigrosser, a noted art historian and curator of the Philadelphia Museum of Art gave a new meaning to this ancient process of making images by way of a stencil print.

It was he who suggested that the term Serigraphy (Greek: seriko-silk; graphos-writing) be adopted to identify the screen process when it was used as a creative art form, in order to distinguish it from its commercial uses in industry. (2, p. 13)

The second person who helped give prominence to this creative form was a woman named Elisabeth McCausland. She was an art critic and a writer. It was through her writings that gallery and museum directors became aware of this process.

About the same time, too, the National Serigraphy Society was founded, with offices, workshop, and a permanent
exhibition gallery located in the heart of New York's art center. (2, p. 13)

Paying tribute in his catalogue forward to Anthony Velonis who pioneered in silk screen research for the WPA, Harry Gottlieb is staging until March 17, the first one-man show of exhibits in that medium. On view at the A. C. A. Gallery, New York, Gottlieb's prints dramatize the range and possibilities of the color print medium, which many contend will bring to the color print some of the popularity enjoyed under the skilled handling of Messrs. Currier and Ives.

One of the transformations wrought by the Federal Art Project was the evolving of the fine arts medium out of the silk screen process that for twenty-five years, has been used commercially for color reproductions. (7, p. 24)

Anthony Velonis was the first to see the possibilities of the process but World War II elevated its aesthetics.

When World War II broke out one might expect that the process of screen printing would lose some of its appeal. The contrary was seen to be true. The process gained importance. The many images that could be printed in a short time with little effort became of great significance.

The United Service Organization (USO) also saw the aesthetic quality of these screen prints.

An indication of the importance of art in the life of the soldier is the recent report that the USO has purchased a large quantity of silk screen reproductions of paintings by William Palmer and Fletcher Martin, to decorate the lounge and game rooms of the USO club houses in service camps. (10, p. 11)

The use of screen printing during the war brought forth many technical advances that improved the process.

The coming of the 1950s and Abstract Expressionism had a devastating effect on serigraphy. In the United States and around the world Abstract Expressionism all but set screen printing back to ancient times.
"Screen printing as an art form sustained only a temporary setback, and rose to new and unprecedented heights with the ushering in of Pop Art" (2, p. 13).

In the 1960s, a new basis for serigraphy again came from the commercial applications of the process. The new artists of Pop Art or Popular Art philosophy used it widely to produce their one-of-a-kind prints. Serigraphy was also used to turn out multiple images in longer print editions.

Among those who made use of the process as a vehicle for their creative efforts are some of our most eminent artists and pacesetters in contemporary art in the United States, Andy Warhol, Corita Kent, Roy Lichtenstein, Adolph Gottlieb, Robert Indiana, James Rosenquist, Larry Rivers, Jim Dine, Tom Wesselman. (2, p. 9)

Many artists have employed the potential of this process in the expressive nature of their work. The process of serigraphy has been used as a tool. We have looked at the respective histories of photography and serigraphy. This historical basis lends a strong foundation for the current study.

The production of images using photographic equipment and serigraphy was chosen for the title of the investigation because it implies the combination of two processes. However, before these processes can be combined they must each be examined in a more specific manner.
The 35 mm camera was the first piece of photographic equipment used in the creation of the individual image elements. The Canon model TLb was selected because of its overall capabilities. This camera was relatively easy to operate. The quality of the image recorded with this camera was quite satisfactory. The lens used with the camera body was a PRO, 1:3.5, 55 mm-135 mm. The zoom feature of this lens allowed it to be focused on the subject and the focal area automatically enlarged to that of the 135 mm lens. A 2x-telemac teleconverter was also used. This enlarging unit was placed between the lens and the camera body. The teleconverter doubled the lens capacity of the camera system. Thus a maximum lens of 270 mm was used. This camera system was totally functional when used to record the subject of wildlife. The film that was used in the camera was Kodak Tri X Pan. This film was a high speed or fast film that yielded very high image sharpness. The film speed was ASA400. The film stopped the motion of the subjects at shutter speeds of 1/250 or 1/500 of a second. An f-stop between f-3.5 and f-8 was used. It was determined that the best camera setting was ASA 350, shutter speed 1/250 or 1/500, and f-stop f-5.6. The reason for this was the low level of available light. After photographic images of the subjects were recorded the film was processed.

A commercial processor was not used for two reasons: first, it was essential to participate in all of the steps of processing the film to better understand the character of the image and more control was
maintained over the results. The 135 film magazine was opened in total darkness and the film was wound on a metal film spool. The film and spool were then placed in a developing canister. The room lights were turned on. The developer used was Kodak DK-50 (1:1). The development time used here was four minutes with the chemicals and water at 68 F. The film canister was agitated at 30 second intervals. After development was completed the film was subjected to a 30-second stop bath. The film was then fixed for four minutes. The film canister was opened and the film was washed in running water for 10 minutes. The film was then dipped in a photoflow solution to aid in the drying process. The film was allowed to air dry for 20 minutes. When the film was completely dry it was cut with a scissors into five frame length strips. The result was usable 35 mm black and white continuous tone negative images. In a normal photographic procedure these would have been placed in a photographic enlarger system and continuous tone paper prints made. The photographic image elements used in this study were only high-contrast in character, however.

In order to create a high-contrast image element from a continuous tone negative a different kind of film was introduced to the procedure. This kind of film was Kodak Kodalith Ortho, type 3 film. The introduction of the Ortho, type 3 film allowed for a variation of the recorded photographic image.

The 35 mm negative was placed in a negative carrier and positioned in an Omega, D2 photographic enlarger. A 135 mm Wollensak enlarging lens was used with this system. To obtain the correct exposure time
for the Ortho, type 3 film a test strip was made. In the dark room a sheet of the 4" x 5" Ortho, type 3 film was placed emulsion or dark side up below the enlarger lens. The enlarging lamp was turned on and six exposures were made on the film. These exposures were made at 2-second intervals. This test strip was developed in Kodalith liquid developer. The Ortho, type 3 film was developed for 4 minutes. The film was constantly agitated during the development. It was then subjected to a 30-second stop bath. The film was then fixed for ten minutes. The film was washed for ten minutes and dried in a drying machine for about 5 minutes. The dry piece of film revealed six progressive degrees of image development. The section that revealed the best image was selected as the correct exposure time. A new sheet of Ortho, type 3 film was exposed for that time and developed. When this piece of film was completely processed it revealed a positive high-contrast image. All of the tonal qualities of the negative were gone. A single positive high-contrast photographic image element had been created (Figure 1). All of the high-contrast 4" x 5" photographic image elements were created in the above manner. A process camera was used to enlarge selected positive high-contrast image elements (Figure 2).

The process camera is a photographic system that consists of the camera proper, a stand or bed that supports the camera, and a copy board upon which the material to be copied is attached. (8, p. 244)

This system was used because it copied the 4" x 5" image element with a great degree of accuracy. The copy board was placed in a horizontal position. A 4" x 5" positive image element was attached to the copy board with transparent tape. The copy board was then placed in the
Figure 1. 4" x 5" Kodalith Ortho, type 3 film positive
vertical position. "The lens of the copy camera is very important to the system" (8, p. 253).

The lens, manufactured of optical precision glass was focused on the 4" x 5" image when the relation between the focal length of the lens and the copy board was adjusted. "Technically, the focal length of a lens is the distance from the center of the lens to the film plane when the lens is focused at infinity" (8, p. 255). This distance was adjusted when the lens was moved on a bellows and the copy board was moved on a track. These operations were controlled by two manual crank wheels. They were located at the back of the camera. The exposing lamps were placed at the rear of the copy board. The aperture of the lens was set at f-stop 32. The camera was then loaded. The camera was loaded at the back of the system.

The Kodak series of PMT papers were used in the process camera. The back of the camera system was placed in the down position. This back also served as a vacuum board that held the film in place. Under safelight conditions a sheet of the PMT Negative paper was centered on the vacuum board. The grey or light-sensitive side of the paper was up. With the PMT Negative paper centered on the vacuum the vacuum pump switch was turned on. The vacuum created held the paper in place. The vacuum board or back of the system was placed in the vertical or closed position and the paper was exposed. The exposure of the PMT material was standardized. The time used was 15 seconds. When the exposing lamps went off the exposure was completed and the vacuum board was lowered. The PMT Negative paper is a high-contrast diffusion-
transfer paper (4b, p. 38). The PMT Negative paper was processed with a sheet of PMT Receiver paper. The PMT Receiver paper was chemically sensitive. The exposed side of the PMT Negative paper was placed in direct contact with the coated side of the PMT Receiver sheet. The uncoated side of the sheet was identified by the printed phrase "This Paper Manufactured by Kodak" (4b, p. 38). To process the sheets they were placed in a diffusion-transfer processor machine (Figure 3).

A diffusion-transfer processor automatically developed the papers.

Feed them simultaneously into the entrance slot of a diffusion-transfer processor so that the negative paper goes under the separator fin and the receiver paper above the fin. During the processing, the sheets are pressed together under a chemical activator, and they exit the processor in complete contact with one another. (4b, p. 39)

The PMT Receiver sheet received the positive image during this processing. These two sheets remained in contact for 30 seconds. When the 30 seconds had passed the room lights were turned on and the sheets were pulled apart. The results were two created image elements. These two image elements were maintained to be further used in the creative combination section of the study. There was one more image element produced using the process camera. It was the PMT Transparency. The transparency was made the same way as with the PMT Receiver except, that before processing a sheet of PMT Transparent Receiver was substituted for the PMT Receiver sheet. Thus, after the exposure of the PMT Negative paper a chemically sensitive PMT Transparent Receiver sheet was placed in contact with it. The manufacturer had cut a notch in the upper right corner of the sheet to identify the sensitive side of the sheet.
Figure 3. Diffusion-transfer processor (12)

Micro/18 assembled
The sheets were placed together with the notch in the lower right corner.

Feed them simultaneously into the entrance slot of the diffusion-transfer processor so the negative goes under the separator fin and the receiver above the fin. During processing the sheets are squeezed together and emerge from the exit slot in contact. (4b, p. 41)

These sheets remain in contact for 30 seconds and then were pulled apart. The four image elements created using the process camera were the PMT Negative paper, its companion PMT Receiver and the PMT Negative and its corresponding PMT Transparent Receiver sheet (Figure 4). The transparent Ortho, type 3 film and the PMT Transparent Receiver sheet were also used as film positives for making the stencils for screen printing.
Figure 4a. PMT Negative paper
Figure 4b. PMT Receiver paper
Figure 4c. PMT Negative paper
Figure 4d. PMT Transparent Receiver sheet
The direct photo method of preparing the stencil for screen printing was used in this study because it maintained the light-sensitive basis that was established in the photographic section. This method of preparing a stencil required only a stretched screen fabric, a light-sensitive emulsion, a film positive, and an exposing light.

The yellow Monotex Swiss fabric used in this study was stretched over a 1½" square, wooden frame. The size of frames used was 22" x 30". "Yellow Swiss fabrics have become the most respected fabrics for supreme screen printing results" (1, p. 75). The fabric used had a reference number of 180, that indicated the mesh count. This polyester fabric was durable and used for repeated application of the stencils.

The emulsion used was a general purpose, DM 259, made to be used with polyester fabrics. It was not light sensitive when purchased and had to be sensitized prior to being used.

This was done by adding a solution of ammonium bichromate. When mixed with water the ammonium bichromate became light sensitive. This solution was prepared in a darkened room prior to being added to the emulsion. The sensitizer was mixed one part to five parts emulsion. The sensitized emulsion was handled only in a darkened room. After the screen fabric was placed on a flat surface the sensitized emulsion was poured directly on the side that was to be in contact with the printing surface. A squeegee was used to spread the emulsion evenly across the fabric. The treated fabric was allowed to dry for one hour. When it
was completely dried it was ready to receive the stencil image.

The stencil images used were the 4" x 5" Ortho, type 3 film or the PMT Transparent Receiver sheet. They were both of a high-contrast nature and worked well as film positives when the stencil was made. The positives were placed on a light box and taped down with transparent tape.

This light box served as the light source used to expose the light-sensitive fabric. It had a clear glass top. The positives were placed on the glass in exactly the position they appeared in when later printed. The positives were used in both the right-reading manner and the manipulated reverse manner. The reversal was accomplished when the transparency was turned over.

The light-sensitive side of the screen fabric was placed down and in contact with the glass and positive image. Several magazines were then stacked inside the frame to press the fabric firmly against the glass. The contact between the fabric and the glass was necessary to produce a sharp stencil.

The fluorescent light tubes within the light box were turned on and the screen was exposed. The stencils used here had a dark image quality and an exposing time of 6 minutes was used. The light that reached the fabric, hardened the emulsion, the areas blocked-out by the black stencil remained soft. When the exposure was completed the total screen was washed with warm water. The soft or unexposed areas were washed away by the water and the hardened or exposed areas remained and formed the stencil block-out. The positive images used to make the block-out
were retained and used further in the creative combination portion of the study. The screen was allowed to completely dry. It was then used to screen print image elements. After these image elements were printed they were creatively combined with those made when the photographic equipment was used.
THE CREATIVE COMBINATION OF THE INDIVIDUAL IMAGE ELEMENTS

Ten final visual pieces were created to show the ways these two sets of image elements were combined. For the purpose of showing and explaining the final pieces each was illustrated on a color slide.

Two surfaces were used to receive the screen printed image elements. The first was 65 lb white paper stock. It had a smooth finish. The sheet size used was $22\frac{1}{2}'' \times 28\frac{1}{2}''$. After this paper stock was used for two of the final pieces it was determined to be unsatisfactory. It was discovered that when the screen printed image elements were applied the paper stock wrinkled. It was determined that this wrinkled surface was caused by the water-based screen printing ink that was used. Following some experimentation it was found that Crescent mat board eliminated the wrinkling problem. The majority of the final pieces were then produced on the mat board.

The screen printed images were applied to the surface first. When these inked areas were dry the photographic image elements were adhered directly to the same surface. The means used to adhere these elements was a spray adhesive. It was a 3M product called SPRA MENT. The selected image elements were sprayed with the adhesive and positioned in their proper place on the final piece.

Since the creative combination of these image elements has been illustrated on the color slides they should be looked at while the description of making each is discussed in the next section.
THE CREATIVE PIECES

1. Title: "On A Bluebird Day"
   
   **Size:** h 16\(\frac{1}{2}\)" x w 17\(\frac{1}{4}\)'
   
   **Materials Used:** 1 sheet of 65 lb white paper stock, 3 pieces of Ortho, type 3 film, 2 pieces of PMT Receiver paper, 4 separate screen printed areas (4 colors of water-based ink), spray adhesive.

   **Methods of Procedure:**
   
   1. The four blue, screen printed images were applied to the surface in separate ink pulls. These areas were allowed to dry completely.
   
   2. The three pieces of Ortho, type 3 film that were used were turned over and sprayed with the adhesive. These image elements were then affixed to the surface.
   
   3. The two pieces of PMT Receiver paper were trimmed to size. These image elements were turned over and sprayed with the adhesive and then affixed in their correct position.
   
   4. A blue accent line was placed around the two PMT Receiver elements to isolate them from the other elements.
   
   5. A second blue accent line was placed around the total piece to complete it.
2. **Title:** "Conservation 1971-1975"

   **Size:** h 19" x w 16½"

   **Materials Used:** 1 sheet of 65 lb white paper stock, 1 piece of Ortho, type 3 film, 1 piece of PMT Receiver paper, 2 sheets of PMT Transparent Receiver, 1 screen printed area (1 color water-based ink), spray adhesive.

   **Methods of Procedure:**

   1. The screen printed area was applied to the surface in one ink pull. A gold color ink was used. The ink area was allowed to dry completely.

   2. The single sheet of Ortho, type 3 used was turned over and sprayed with the adhesive. It was then affixed to the surface.

   3. The twelve pieces of PMT Receiver paper were cut from a single sheet of PMT Receiver paper. Each was turned over and sprayed with the adhesive and then affixed to the surface.

   4. The three pieces of PMT Transparent Receiver sheet that were used were cut from two sheets of PMT Transparent Receiver. Each was turned over and sprayed with the adhesive and then affixed to the surface.

   5. The piece was determined to be complete.
3. **Title:** "March Montage"

   **Size:** h 13" x w 27½"

   **Materials Used:** 1 sheet white Crescent mat board, 5 pieces of Ortho, type 3 film, 1 piece of PMT Negative paper, 1 sheet of PMT Transparent Receiver, 5 screen printed areas (4 colors of water-based ink), spray adhesive.

   **Methods of Procedure:**

   1. The screen printed areas were applied to the surface in five pulls of ink. There were 4 colors of ink used. They were: 2 dark golds, 1 light gold, 1 blue, and one brown. These inked areas were allowed to dry completely.

   2. The 5 pieces of Ortho, type 3 film that were used were turned over and sprayed with the adhesive. They were then affixed to the surface in line, two of them over screen printed areas.

   3. The single sheet of PMT Negative paper used was trimmed to size. It was turned over, sprayed with adhesive and affixed to the surface.

   4. The single piece of PMT Transparent Receiver used was trimmed to size, turned over, sprayed with adhesive, and then affixed to the surface over the blue screen printed area.

   5. Three black accent lines were applied to the piece and it was determined to be complete.
4. **Title:** "From Iowa's Corn Fields - 1976"

**Size:** h 20\(\frac{1}{4}\)" x w 28\(\frac{3}{4}\)"

**Materials Used:** 1 sheet of black Crescent mat board, 4 pieces of PMT Negative paper, 1 sheet of PMT Receiver paper, 5 screen printed areas (2 colors of water-based ink), spray adhesive.

**Methods of Procedure:**

1. Two dark gold areas were printed on the surface. Three light gold areas were printed on the pieces of PMT Negative paper. The screen printed areas were allowed to dry.

2. The 4 pieces of PMT Negative paper with their 3 screen printed areas were cut from a single sheet of PMT Negative paper. Each piece of PMT Negative was turned over and sprayed with the adhesive and then affixed to the surface.

3. The piece of PMT Receiver paper was trimmed to size. It was turned over and sprayed with adhesive and then affixed to the surface.

4. The piece was determined to be complete.
5. **Title:** "Ducks Unlimited"

**Size:** h 23½" x w 32"

**Materials Used:** 1 sheet of white Crescent mat board, 2 sheets of PMT Negative paper, 3 sheets of PMT Receiver paper, 12 screen printed areas (2 colors of water-based ink), spray adhesive.

**Methods of Procedure:**

1. The ten blue screen printed areas were applied to the surface in ten ink pulls. The two grey inked areas were then applied with two ink pulls. The screen printed areas were allowed to dry.

2. The two corresponding sheets of PMT Negative paper and PMT Receiver paper were turned over, sprayed with adhesive and positioned on the surface in the same manner that they appeared when pulled apart following their processing.

3. The smaller trimmed PMT Negative and its companion PMT Receiver sheet were turned over and sprayed with adhesive and affixed directly over the two grey screen printed areas.

4. A third piece of PMT Receiver paper was trimmed, sprayed, and affixed between the two grey printed areas and their paper overlays.

5. The piece was determined to be complete.
6. **Title:** "Portrait of a Duck Hunter"

   **Size:** h 21\(\frac{1}{4}\)" x w 25\(\frac{1}{2}\"

**Materials Used:** 1 sheet of grey Crescent mat board, 1 sheet of black Crescent mat board, 1 sheet of white Crescent mat board, 2 PMT Negative sheets, 1 PMT Receiver sheet, 1 PMT Transparent Receiver sheet, 4 screen printed areas (3 colors of water-based ink), spray adhesive.

**Methods of Procedure:**

1. The brown screen printed area was applied to the grey Crescent mat board. In two separate ink pulls the two blue ink areas were applied to the same surface. The white ink was applied to the 1 sheet of PMT Positive paper. The ink was allowed to dry.

2. The larger of 2 PMT Negatives was cut to size. This piece of paper was turned over and sprayed and then placed directly over the brown printed area. The cutaway portion allowed the brown ink to remain visible.

3. The smaller PMT Negative piece was cut from a larger PMT Negative sheet. This piece was sprayed with adhesive and affixed to the surface.

4. The PMT Transparent piece was cut from a larger sheet, sprayed with adhesive and affixed to the surface.

5. The PMT Receiver piece and its screen printed area were cut to size and sprayed with adhesive and affixed directly over the brown screen printed area and partially overlapping to first PMT Negative paper.

6. The grey mat board was turned over and sprayed with adhesive. It was affixed to the sheet of black mat board. These two mat boards were then sprayed and affixed to the white mat board.

7. A brown accent line was placed around the piece and was completed.
7. **Title:** "Pheasant Hunting"

**Size:** h 21\(\frac{3}{4}\)" x w 25\(\frac{3}{4}\)"

**Materials Used:** 1 sheet of white Crescent mat board, 1 sheet black mat board, 2 PMT Negative sheets, 1 PMT Receiver, 2 PMT Transparent sheets, 4 screen printed areas (3 colors of water-based ink), spray adhesive.

**Methods of Procedure:**

1. The two grey screen printed areas were applied to the surface in two separate ink pulls. The red screen printed area was applied in one ink pull. The white ink area was printed directly over the PMT Receiver paper. The inked areas were allowed to dry.

2. The large PMT Negative was turned over and sprayed with adhesive then affixed to the surface.

3. The companion PMT Transparent Receiver sheet was turned over, sprayed and placed directly over the PMT Negative.

4. The second PMT Negative was trimmed to size, turned over, sprayed, and adhered to the surface.

5. The PMT Receiver piece and its white screen printed area were turned over, sprayed and affixed directly over the small grey screen printed area.

6. The trimmed PMT Transparent piece was sprayed and placed on the surface directly over the red screen printed area.

7. The white mat board was turned over and sprayed with adhesive and then affixed to the black mat board.

8. A black accent line was placed around the piece to finish it.
8. **Title:** "Circa 1946-1"

**Size:** h 28" x w 28"

**Materials Used:** 1 sheet brown Crescent mat board, 1 PMT Receiver sheet, 1 PMT Transparent Receiver sheet, 1 screen printed area (1 color of water-based ink), spray adhesive.

**Methods of Procedure:**

1. The brown screen printed area was applied to the brown mat board. It was allowed to dry.

2. The PMT Receiver sheet was turned over and sprayed with adhesive. It was then affixed to the surface.

3. The PMT Transparent piece was cut to size and turned over and sprayed with adhesive. It was then affixed to the surface.

4. The piece was determined to be completed.
9. Title: "Circa 1946-2"

Size: h 28⅛" x w 27"

Materials Used: 1 sheet of grey Crescent mat board, 2 pieces of black Crescent mat board, 4 PMT Negative papers, 2 screen printed areas (2 colors of water-based ink), spray adhesive.

Methods of Procedure:

1. The grey screen printed area was applied to the first piece of black mat board. It was allowed to dry. The brown screen printed area was printed directly over the largest PMT Negative paper.

2. The 3 small PMT Negative papers were trimmed to size. They were turned over and sprayed with adhesive. They were then affixed in line on the black piece of mat board with the grey screen printed area.

3. The PMT Negative and its brown screen printed area were turned over and sprayed with adhesive. It was affixed to the second piece of black mat board.

4. The two black pieces of mat board were then turned over and sprayed. They were then affixed to the single sheet of grey mat board.

5. The piece was determined to be completed.
10. **Title:** "Circa 1946-3"

   **Size:** h 28½" x w 28"

   **Materials Used:** 1 sheet brown Crescent mat board, 1 sheet Crescent grey mat board, 5 PMT Transparent pieces, 2 screen printed areas (2 colors water-based ink), spray adhesive.

   **Methods of Procedure:**

   1. The white and the brown screen printed areas were applied to the brown mat board surface. They were allowed to dry.
   2. The 5 PMT Transparent pieces were cut to size. They were turned over and sprayed with adhesive. They were then affixed to the brown mat board surface.
   3. A white accent line was placed around the total piece.
   4. It was turned over and sprayed with adhesive. It was then affixed to the grey sheet of mat board.
   5. The piece was determined to be completed.
SUMMARY

The purpose of this investigation was to explore the character of visual images produced by the creative combination of individual image elements produced using specific photographic equipment and serigraphy. The processes of photography and serigraphy were used as tools to produce the individual image elements. These individual image elements had a common characteristic. They were photographic in origin. The original photographic images were recorded, then subjected to variations and manipulations throughout the investigation. High-contrast positive images were created from tone negatives. These positive image elements were then manipulated to create the PMT Negative, PMT Receiver, and PMT Transparent Receiver image elements. Chosen image elements were then further manipulated to make the stencils necessary for screen printing. The two groups of image elements, the photographic and the serigraphic, when creatively combined became the determinants of the ten final visual pieces. These ten pieces are each illustrated on color slides accompanying this thesis to show the range and extent of their character.

This investigation has generated a greater appreciation for the processes of photography and serigraphy. Especially considering the anticipated rapid advancements in photography the potential for manipulations of the photographic image could be greatly enhanced when used in creative combination with serigraphy.

The study has also allowed for attainment of a greater understanding
of the artistic and commercial applications of both photography and serigraphy to advertising.

The investigation has further provided essential technical and practical experience in working with photography and serigraphy. This experience has served as preparation to better be able to work in the academic and commercial areas of advertising.
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GLOSSARY

Block-out: For screen printing, area on the screen fabric blocked-out

High-contrast: Difference between light and dark, high-contrast little or no difference

Individual image element: For this paper, the images created using photographic equipment or serigraphy

PMT Negative: High-contrast, diffusion transfer paper, positive right-reading copy produced

PMT Receiver: Companion of PMT Negative, receives image from, white surface black image area

PMT Transparent Receiver: Companion of PMT Negative, receives image from, transparency used for film positive screen printing

Right-reading: Material that is in correct position when viewed from right to left on page

Test strip: Multiple exposure on the same piece of film to show the correct exposure
Many people have helped to make this study possible and I would like to thank them. To my major professor, Mr. Clair Watson, who supervised and took a great interest in this study, and to my graduate committee, Miss Mary Meixner, Mr. Rodney Fox, and Mr. Richard Heggen who taught and provided the needed support to complete this study, I extend my most grateful thanks.

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