



The effect of limited palettes on the structuring of painting
by Ione Alpha Foss

A THESIS Submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree
of Master of Applied Art at Montana State College

Montana State University

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Abstract:

It was the object of the experiment to discover whether any significant difference in painting thought and structure would result from the use of particular color ranges, and how such groups might be used to help organize an approach to the study of painting.

In proceeding with the exploration, a study was made of the function of color in painting in the past. Color theories were reviewed to discover their effects on painting. To clarify the discussion of color theories, diagrams of three color solids were added in Appendix I. After conferences with advisors, four color-groups were then chosen for study. These included a primary—colors palette, a spectrum palette, a yellow-violet palette, and a simple four-toned palette. Each range was explored first by making a value scale. Several paintings were then developed with each range, the palettes being varied with each painting so that the qualities of similar colors might be observed. Colored slides of a number of the paintings which resulted from this exploration were placed in Appendix II.

It was found that the primary-colors palette might be a valuable device for learning the mixing of colors from a basic, minimum group. However, since ranges of hue, value and intensity can be accomplished only by elaborate mixing, this palette does not of itself offer anything to the structuring of painting.

The spectrum palette was found to be light and bright in quality, primarily a palette of hue, and therefore inclined to emphasize local color in painting. When earth colors are added to complete the range of value and intensity, its possibilities for the mature painter are unlimited.

While it contains an adequate range of hue, the yellow-violet palette emphasizes the natural value of color. This quality makes it valuable for the student who needs to identify the problems of painting.

The four—toned palette has a wide range of value and intensity, but a very limited range of hue. By eliminating the problem of local color, this palette forces concentration on values and intensities.

In reference to her own painting development, the author has found that the study of painting by means of particular color ranges has eliminated much confusion, and has helped to give direction to the work. For the beginning artist, it would seem that painting problems might be discovered and solved more directly if some of the means of expression are strictly limited.

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ABSTRACT

It was the object of the experiment to discover whether any significant difference in painting thought and structure would result from the use of particular color ranges, and how such groups might be used to help organize an approach to the study of painting.

In proceeding with the exploration, a study was made of the function of color in painting in the past. Color theories were reviewed to discover their effects on painting. To clarify the discussion of color theories, diagrams of three color solids were added in Appendix I. After conferences with advisors, four color-groups were then chosen for study. These included a primary-colors palette, a spectrum palette, a yellow-violet palette, and a simple four-toned palette. Each range was explored first by making a value scale. Several paintings were then developed with each range, the palettes being varied with each painting so that the qualities of similar colors might be observed. Colored slides of a number of the paintings which resulted from this exploration were placed in Appendix II.

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CHAPTER I

INTRODUCTION

Shall I ever reach the goal so eagerly sought and so long pursued? I hope so, but as long as it has not been attained, a vague feeling of discomfort persists which will not disappear until I shall have gained the harbour—that is, until I shall have accomplished something more promising than what has gone before, thereby verifying my theories, which, in themselves, are easy to put forth. The only thing that is really difficult is to prove what one believes. So I am going on with my researches . . .

(Cezanne)¹

Statement of the Problem

The writer has constantly felt, as a student, the obscurity, the complexity, and the lack of clear definition and expression of the problems involved in painting. That painting is a visual art makes the verbal expression of its problems most difficult. More particularly, the problems referred to are those of the process and composition, that is, the structuring of painting, as distinct from the purposes of painting, which in the modern tradition have also become both numerous and complex.

Justification for the Study

Constable, the great English landscape painter, sought to

¹Read, Herbert, (citing a translation by Gerstle Mack), "The Modern Epoch in Art," History of Modern Painting from Baudelaire to Bonnard, Albert Skira, editor and publisher, Geneva, Switzerland, 1949, p. xvii.

distinguish between painting as such and the indiscriminating aping of the current fashion in painting when, in 1836, he wrote the following:

I have endeavoured to draw a line between genuine art and mannerism, but even the greatest painters have never been wholly untainted by manner.—Painting is a science, and should be pursued as an enquiry into the laws of nature. Why, then may not landscape be considered as a branch¹ of natural philosophy, of which pictures are but experiments?

To Constable, who painted in the Renaissance tradition, art was the recording of the wonders of the natural scene in dark and light. Since his time, painting has become an expression sufficient unto itself, dependent on the natural scene only at the will of the artist. It has extended itself into a science which is an inquiry into the possibilities of creative composition in line, mass, value, and color within the picture plane. Now, as in Constable's day, it is the task of the artist to discover the problems of "genuine art", the problems which are inherent in the means of expression. These means are the pigments, the brushes, the canvas, and the lines, masses, values and colors which grow out of them. The artist must have the insight to distinguish them from the tale he wishes to tell—to understand the difference between "this is a boy," and "this is the image of a boy," and further, "this is a symbol of a boy," and even to the extent of "this is a problem in painting." And moreover, the artist must be able to approach his problems independently of the current fashion in art.

¹Ibid., (quoting Constable, from a note dated June 16, 1836), p. xvii.

He must know that the fashion is not a fundamental dimension, since to aim for a particular style requires that success be judged by the degree to which the style has been achieved. With such understandings, the artist may be able to work creatively from the beginning, and so avoid some of the frustration of confusion.

Objectives of the Study

Although much has been written about the color effects achieved by various artists, little research apparently has been done on the effect of certain color groups or palettes on the building of a painting—that is, on the process or the thought sequence which might result from the use of particular colors. The writer feels that the choice of particular pigment ranges may have a basic effect on the construction of a painting composition, and that through the thoughtful use of these color ranges, the artist may discover with less confusion some of the important problems of painting, and so build his own solutions. Therefore, it is the purpose of this study, after briefly considering the history of the use of color in art, to explore the qualities, possibilities, and limitations of four basic palettes in order to understand the things that can be learned about painting through these palettes, and to consider the potentialities of the palettes in developing painting concepts. It is not the purpose of the author to state any absolutes in art, or any prescription for painting, nor is there any intention to effect the message, to dictate style, nor in any way to

circumscribe the result in painting. There is no intention to imply that this is the only way to approach the subject, nor that this is a superier way. It is the author's object to provide, through this color study, a rational means or vehicle for exploration of painting.

CHAPTER II

STATEMENT OF THE ESSENTIAL PROBLEMS OF PAINTING

The novice in the business of painting begins with a creative urge to record a beautiful scene, to express a profound message or a personal reaction. Immediately, he finds himself faced with the means of expression and the problem of what can be done with them. He is faced with the canvas, which has a limited, particular height and width, and no depth at all. This, in artists' language, is the picture plane. He is faced with the problem of drawing—the recording of the essential lines, shapes and directions of mass to express the intrinsic meaning of the form. He is faced with the problem of composition—the arrangement of the shapes of his drawing within the picture plane in such a way that all parts of the composition, including the limits of the picture plane, are essential to all other parts, and enhance and strengthen all other parts in the expression of the artist's message. Moreover, because the art of man has evolved far from the unsophisticated, flat beginnings of drawing, the artist must decide to what extent he will accept the depth-less quality of the canvas. He must consciously decide whether he will distribute forms flat and separate on his canvas as do primitive artists; whether he will retain the flatness of the canvas, but will place the forms so that they will lie over each other like cut pieces of paper, as does Matisse; whether he will model the forms outward like pieces of sculpture, as did Michelangelo, but leave the background amorphous and so ignore it; whether he will give

to the picture, through ingenious device, a depth relating to its width and height, as did Vermeer and Cezanne; or whether he will paint an infinity of distance, making his painting a window, as did Claude Lorrain and George Inness. And finally, the artist is faced with the problem which is interwoven with every other problem, since it is the means by which every other problem is stated---that of saying it all with color.

CHAPTER III

REVIEW OF THE HISTORY OF THE FUNCTION OF COLOR IN PAINTING

The picture plane, the drawing, the composition and the color—these may be said to be the elements of painting. As soon as the skeleton plan has been placed on the canvas, the first three proceed to be expressed by the fourth—color. Thus, the evolution of the use of color may be said to be the evolution of painting.

Symbolic and Decorative Color in Early Civilizations

During early civilizations, when easel pictures were unknown, and paintings were made on walls for religious or decorative purposes, as in ancient Egypt and in Crete, color was used flat, to designate the object, for symbolic purposes, or to beautify the design. Such paintings were in tempera (pigment mixed with a binding medium, and applied to the surface), or in fresco (pigment applied directly to wet plaster, so that the pigment combines with the lime to become permanent). Pigments were mineral and earth colors. Later, in the western world during Romanesque and Gothic times, when painting was still primarily for religious purposes, colors were still applied in this symbolic and decorative manner both in wall paintings and in the tiny miniatures of the illuminated manuscripts.

Transparent Color to Enhance Dark and Light in the Renaissance

With the Renaissance came great changes in painting. Many

elements contributed to its development. The device of drawing in perspective was perfected, so that the illusion of depth could, within limits, be recorded on the picture plane. A great inquiring into science brought about marvelous knowledge and drawing of the human body. And the development of painting in oil made possible wonderful atmospheric effects and the managing of light and shade to achieve the outward modelling of forms which became the Italian phenomenon, *chiaroscuro*. These were effected, not with color in oil as we now use it, but with transparent glazes of oil color over a drawing in monotone. These were the painting tools of the Renaissance--perspective, technically marvelous drawing in both line and dark and light, and transparent colored glazes.

The masters of the Renaissance did not revolutionize the painting craft overnight. Until the advent of oils, painting was done in tempera or in fresco. After the development of oil painting, a method was perfected by which the picture was built up in successive layers. First, the line drawing was placed on the gesso (a chalk ground used for sizing the canvas), usually in black ink. Then the whole was toned with a medium dark color, usually reddish brown or dull green, called the "*imprimatura*." Forms were modelled or "heightened" on this *imprimatura* by the laying on of repeated thin coats of white (probably white lead), until the picture was complete in a monochrome, called the "dead color." Following this, many thin coats of colored oil, called glazes, were then built up, darkening the shadowed parts, while colored

glazes and more coats of white were applied to the light parts. This gradual building up of many coats of transparent color--actually as many as thirty or forty in some areas of the picture, according to Titian, gave the rich, glowing depths and the sense of modelling and distance to Renaissance painting. The entire painting was built on a structure of values as these values refer to the modelling of three-dimensional form. Form and color were treated as two distinct phases, color embellishing the dark and light.¹

The Renaissance artists became so skillful at this modelling in monotone, and at drawing in perspective, that they did these to the exclusion of other things. The picturing possibilities were so marvelous, the skill required so high, and the portraits which resulted so much coveted by kings and merchant princes, that this technique of painting survived without much change for several centuries. Botticelli, Durer, Michelangelo, Titian, Holbein, El Greco, Rubens, Van Dyck, Rembrandt, Gainsborough, Ingres--these all used essentially the technique of glazing over the optical grays. Their names carry us into the nineteenth century. It was the standard, the only, way to paint.

The Nineteenth Century, and New Dimensions in Color

By the nineteenth century, drawing in perspective and "shading" the form were old stuff. Every medical student was familiar through

¹ Doerner, Max, The Materials of the Artist and Their Use in Painting, Harcourt, Brace & Co., Inc., New York, 1934.

contact with every bone and muscle of well-dissected cadavers, and the camera had put the portraitist out of business. In addition, there were movements in painting which were undermining the old traditions of depicting solid form.

The classic painters had worked in the studio, using planned lighting on models, or depicting the classical, oblique angle of light on their drawing of imagined scenes. It was this oblique angle of light which, in the hundreds-year old tradition best brought out solidity of form. However, a group of painters, about 1840, made a revolutionary move. They went outdoors to paint. These open-air painters, the "Pleinairistes," discovered the atmosphere as a pictorial element. While they continued the tradition of linear perspective, they observed that this atmosphere softened the edges of distant objects, and that the identity of surfaces disappeared. Moreover, while they continued accurately to draw anatomical proportions, they noted that when bathed in the outdoor atmosphere, objects lost their appearance of solidity, so that little modelled effect was observable. In addition, they realized that the atmosphere altered or obscured the local color. These discoveries were the direct result of a critical observation of the natural scene. (Curiously, many of the traditional painters, in their care for following rules, had forgotten how to look at nature.)

The Pleinairistes divorced tradition when their desire for real observation of the natural scene moved them out-of-doors. Then this move made necessary a more direct and faster method of painting than

the old way of glazing over the modelled grays. Rather than coloring the drawing as the Renaissance artists had done, Courbet, the dean of the Pleinairistes, worked in an infinite gradation of cool grayish and warm brownish tones. He applied the color directly with a palette knife in rather transparent tones, and broke into these tones with other colors. Jongkind applied color in small, separate patches, or in modulations which gave a brilliant quality to his compositions. Millet and Daubigny, too, were masters of this direct tonal painting. These non-conformists were the immediate predecessors and the teachers of the Impressionists. Courbet was the teacher of Pissarro, while it was the influence of Jongkind on the youthful Monet which started the latter on his quest for a luminous quality.¹

Color Theories and Their Relation to Painting with Pigments

Until a science of mechanical perspective was perfected, the drawing of three dimensional form was done intuitively. Until science analyzed and dissected the human body, the drawing of it remained primitive and symbolic in nature. In the same way, until the time of Newton the use of color was decorative, symbolic, and applied intuitively, with the pigments available.

The spectrum. The activities of a physical scientist are pertinent to this investigation because of their revolutionary results in

¹ Schmidt, Georg, "Lessons of the Past," History of Modern Painting, Matisse, Munch, Rouault, Albert Skira, editor and publisher, Geneva, Switzerland, 1950.

the world of painting.

Sir Isaak Newton, in 1666, split white light into its components by means of a prism. Newton realized that by adding the purples (the violet-reds which are not visible in the spectrum) he could effect a continuous transition through all the colors, making the spectrum band turn upon itself, forming a circle of color. While the colors of the spectrum contain an indefinite number of hues, these fall into dominant groups. Drawing an analogy between the frequencies of the sound waves which occur in the musical octave, and the frequencies of light waves, Newton spoke of the seven colors of the rainbow—red, orange, yellow, green, turquoise, blue, violet.

The primary colors. In 1730, Le Blond of Frankfurt discovered he didn't need all seven of Newton's colors for color printing, but that he could obtain practically the same results with only three—red, yellow, and blue. So began the doctrine of the three primary colors.

Johann Wolfgang Van Goethe, in 1810, with his theory of the complementaries of the three primaries and their contrast effect, so greatly influenced Eugene Delacroix as to change the history of art. Newton; Le Blond; Goethe; Delacroix—this succession brought color science directly into the painting art. The painting revolution of the Impressionists was based on the spectrum sequence, and on Delacroix's principle that a color is made more brilliant when associated with its complement.¹

¹ Ibid.

Color science has continued, and many individuals have worked for a logical and practicable color theory. Much controversy has arisen over the primaries--what they actually are. Other problems which color science has attempted to solve include the standardization of colors, and of the steps in tints and shades, the naming of colors, and the perfection of a sure-fire device for securing color harmony.

Albert B. Munsell, an American artist and teacher (he studied in Paris, at Julian's, between 1890 and 1900), insisted on five principle hues--red, yellow, green, blue, purple--evenly spaced around the circle.¹ This places blue-green as the complement of red, purple-blue as the complement of yellow, etc. Wilhelm Ostwald, a German scientist, considered four primaries--yellow, red, ultramarine blue, and sea green, evenly spaced around the color circle.² This even spacing of the colors was essential to these theorists, who felt that a color science required a specified degree of change, and the identification by code name of each change of hue, value and intensity. Faber Birren, a contemporary color theorist, considers the four colors red, yellow, blue and green as primary, but has worked out a "Rational Color Circle" with a varying number of steps between the primary colors.³

¹Munsell, A. H., A Color Notation, An Illustrated System Defining All Colors and Their Relations by Measured Scales of Hue, Value and Chroma, Munsell Color Company, Inc., Baltimore, Md., 1941.

²Ostwald, Wilhelm, Color Science, Winsor & Newton Ltd., 38 Rathbone Place, London, W. 1, 1931.

³Birren, Faber, Color Dimensions, The Crimson Press, Chicago, Ill., 1934.

The qualities of color. Each of these scientists has also worked out a complex color structure. Munsell is responsible for the idea of the three dimensions of color—hue, value and chroma (or intensity). Ostwald extended this concept by considering the achromatics (the gradations from black to white) as color sensations, and also by considering black and white as color elements when added to other colors. Birren has extended the work of Ostwald to consider the dimensions of color as being hue, black and white, with the intermediaries, tint, tone, and shade.

The color solids. From these major premises, the theorists have extended their work to the creation of three dimensional structures of color. Early in color history, Newton had recognized the continuous transition of colors which made it possible to turn the spectrum band into a color circle. Goethe divided this circle into three major divisions, and placed secondary colors between so that the primaries were given constant complements. Munsell, realizing the inadequacy of such an arrangement, worked out a color sphere, in which the axis extended from white at the top to black at the bottom, while the lines of color were placed roughly like the lines longitude. The cool colors occupied one hemisphere, progressing from yellow near the white top, through purple near the black bottom. The warm colors occupied the opposite hemisphere, with an equivalent progression. (See Appendix I, Figure 1.) Munsell's color sphere placed each color in its pure state at a relative distance from the neutral axis, red in its pure state being

farthest from the neutral axis. In addition, the natural value of color was taken into account, the pure hue of yellow being placed at a high latitude, giving it few tints and many shades, while violet was placed near the black apex, giving it many tints and few shades.

Ostwald, a scientist in the fields of chemistry and physics, working with rigorous formulas, developed a complex "Analytical Bi-conical Color Solid," having the shape of a double cone, so arranged that the bases come together to form an equator. (See Appendix I, Figure 2). The axis of the double cone grades from white to black, while the full colors lie at the equator. Ostwald's color solid accounts for tints, shades and tones (hue plus black and white) of all colors, but has the fault of giving an equal number of tints and shades to all colors, that is, not allowing for the natural value of the hue.

Birren has gone a step further, and combined these two—the Munsell color sphere and the Ostwald color solid. Taking into account the inherent difference in the values of hues at full intensity, Birren has altered the Ostwald solid by tipping the equator which carries the colors at full intensity. The area of the equator containing the yellows is placed high, nearer the white apex, allowing a smaller number of steps from yellow to white, and a greater number from yellow to black. Similarly, the violet sector of the equator is tipped toward the lower apex, allowing for a smaller number of steps between violet and black, and a greater number from violet to white. (See Appendix I, Figure 3.)

Effects of color studies. A standardization of hues, particularly since the invention of coal tar dyes, has made possible the greater control of colors. This standardization has affected the manufacture of all colors, the producers striving for the greatest purity and intensity as defined by color science. The effect of these efforts is evident in the great variety and beauty of color in manufactured goods. The effect on the arts is evident in a different way. By observing the work of children and others with little training who work with inexpensive show card colors and water paints and crayons, it is evident that the highest intensity of color is not a quality most essential in pigments. While these paints (which receive their color from dyes) are of the greatest possible purity, the resulting paintings are garish and are particularly lacking in the value and intensity changes necessary for a pleasant effect. While such changes by the manufacturer's intention can be achieved by mixing, the very complexity of the problem serves as a barrier to learning. Art supplies companies would be well advised to work toward groups in their inexpensive colors which would contain a natural value range, together with several useful neutral blending colors, rather than toward colors which are perfected in the direction of the scientists' theories.

The artist, however, as a result of research, is able to more consistently secure pigments of high purity. Moreover, his color ranges have been considerably affected by the color theories, particularly those of the three primary colors and their complements, the

spectrum range, and the asymmetrical color solid of Birren, the key feature of which is the value difference between yellow and violet. The pigments of the artist have remained essentially the same, even though in most cases they do not approach the intensities of the standardized colors. Moreover, although the color solids of Munsell, Ostwald, and Birren contain hundreds of steps in hue, value and intensity, no formulas can approach the complexity of the harmonies sought for by the artist. It is futile, therefore, for the student to hope to build his paintings by the rules. Nevertheless, the principles of color harmony can be used as tools to find solutions to problems which arise during the process of painting.

The Impressionists and the Painting Revolution

Until the time of scientific inquiry into the nature of color, it occurred to no one that there might be any other kind of painting than that based on values. This is the reason for the great disturbance at the activity of the Impressionists. This little group of painters, who for a short time in their own careers were inventors, are remembered, not for the greatness of their art, but for the fact that they sparked a revolution in painting which led to changes such as had not been seen since the days of Giotto.

Delacroix, the Impressionists, and the law of complementary colors. Delacroix, who worked between 1820 and 1840, preceded the

Pleinairistes, and scandalized the public with his violent pictorial subject matter. However, it was the research he did on the primary colors which most influenced the next generation. These three colors—red, yellow, and blue—Delacroix maintained, are intensified optically when placed beside their spectral complementaries—that is, red beside green, blue beside orange, yellow beside violet. This was a novel approach—the painting media being thought of as having reactions on the eye which were distinct from their function in recording the natural scene. The Impressionists, looking for a way to get maximum luminosity into their pictures, developed this law. They left the tonal paintings of the Pleinairistes behind, having discovered that colors are more brilliant than white. Blue shadows painted on orange walls are typical of early Impressionism.¹

Backgrounds of Impressionism in history. The use of complementary colors in shadowed parts was not without precedent in the history of painting. A treatise describing the painting technique of Giotto states that the flesh parts were built up of prescribed colors "on a principle handed down from antiquity," beginning with a ground of Veronese green earth, over which the flesh was painted in three graded tones of red ochre mixed with white, the green earth being allowed to show through in the shadows. Here, the painting was in tempera, and

¹ Schmidt, Georg, "Lessons of the Past," History of Modern Painting, Matisse, Munch, Rouault, Albert Skira, editor and publisher, Geneva, Switzerland, 1950.

so was relatively opaque, in contrast to the transparent darks of the later Renaissance.¹ Leonardo da Vinci when he wrote the following, was conscious of the play of color in the atmosphere:

Just as a stone flung into the water becomes the center and cause of various circles, and a sound produced in the air spreads itself out in circles, so each body situated in the luminous air is spread out circle-wise and fills the surrounding parts with infinite images of itself and is present all in the whole and all in every part.²

Moreover, Titian, a giant of the Renaissance, invented the breaking of sharp, clear colors with contrasting hues, doing so to subordinate the color to the dominant tone of the composition. Thus, Titian consciously freed himself from the tyranny of local color for the sake of the structure of his composition.³

The scientific inquiries of the Impressionists. The discovery of the spectrum and the realization of color as the component parts of light was seized upon by a little group of painters, who believed that they had found a revolutionary thing in painting. They observed pigments closely to find the colors which would bring them nearest to the spectrum. Rutter lists a specimen palette as containing the following: white, cadmium yellow, vermilion, madder lake, cobalt violet, cobalt

¹Doerner, op. cit.

²Sherman, Hoyt L., (citing Leonardo da Vinci's Notebooks, by Mac Curdy, Edward), Cezanne & Visual Form, Part 2, The School of Fine and Applied Art, Ohio State University, Columbus, Ohio, September, 1942, p. 79.

³Doerner, op. cit.

blue, ultramarine blue, and emerald oxide of chromium.¹ Because their close observation of nature told them that shadows are never black nor even grey, no black was used. White was freely allowed, and also the mixture of neighboring spectral hues. Using these colors, the Impressionists analyzed and tried to record the color effects of light and shadow. They gazed profoundly, and recorded in tiny dabs every minute color differentiation on objects, on grass, on water, on flesh. They examined the effect of texture on color, and the reflections of color on color.

As the experiments of the Impressionists proceeded, they came to realize that the artist can never, out of his paint box, even approximate the brilliance of nature. So he must substitute a scale which makes the intensity of his colors comparative to the differentiations in nature. The Impressionists and their immediate successors tried to capture the brilliance they saw with brilliant colors in combination, and placed in contrast to each other. The little dabs of contrasting color which they scattered through all areas--the red dabs in green fields where no poppies grew--were the origin of the famous Impressionist "comma" brush stroke. Seurat and Signac carried this theory to its limit. They realized that two colors placed side by side in tiny dots are more brilliant than the two colors when mixed.² They

¹ Rutter, Frank, Evolution in Modern Art, The Dial Press, New York, 1926.

² Gordon, Jan, Modern French Painters, Dodd, Mead & Co., New York, 1936.

became known, as a result of their technique, as the "Pointillists." They turned from a study of the appearance of the object to a study of the means by which that appearance was perceived.

The Impressionist movement as such was short lived. Of the original group, only Monet continued his search for light throughout his life. Pissaro, the father figure of the movement, continued to work with the theory, but he returned to and developed the formal, sensitive composition which was part of his nature and his training. Renoir never lost the Impressionist light, but his painting of figures developed exaggerated, sculpture-like, rounded qualities. Through his method of painting shadows by means of color reflections, he became the greatest modern painter of flesh.

The place of the Impressionists in the painting tradition. This group, however, had succeeded in greatly changing the course of painting. The Pleinairistes had broken the tradition of local color, and had weakened, through the use of aerial perspective, the illusion of surface reality and material solidity. They had also broken with tradition in that they painted directly, rather than in the stages of drawing, modelling, color. And this they did from the natural scene rather than in the studio. The Impressionists continued the breakdown of tradition in that they dissolved modelled objects, and left the contours of forms indefinite. Moreover, they not only ignored the surface qualities of objects, but in their search for the luminous effect they broke away completely from the necessity of recording local color.

Two Post-Impressionists and Two Traditions

The Post-Impressionists were a group of painters who took what had been learned by the Pleinairistes and the Impressionists, adapted it to their needs, and individually went their own ways. Among these were two who greatly influenced the development of painting through their use of color. These two were Vincent Van Gogh and Paul Cezanne.

Van Gogh and the beginnings of self-expression. The painting of Van Gogh is a desperately personal expression of the exaggerated emotions of a poetic, humanitarian neurotic. The fact that this neurotic was a great artist who was super-sensitive to color changed the course of modern painting.

The early work of Van Gogh is significant in that it discloses the background of the artist. Van Gogh learned painting in the tonal colors of the Pleinairistes, and his early strong, forceful drawing with its dramatic, social content shows the influence of Millet. It is important to know that, impulsive and violent as this man's work may appear, he was no slap-dash artist. His own comment was, "I do not mean that I never turn my back boldly on nature . . . but I am frightened to death of losing accuracy of form. Perhaps after ten years study, I shall try . . ." ¹

Following his early period of somber coloring, Van Gogh learned the use of pure color and Delacroix's principle of contrasting complementaries from the Impressionists and the Pointillists. He painted a

¹Ibid., p. 43.

number of canvases in the technique of dots.

Van Gogh could not be satisfied, however, with this proscribed method. His disturbed emotional life was constantly in need of analysis and expression. His early drawing shows the development of sensitive, dramatic contour lines. (Delacroix had used the dramatic contour line to the point of distortion.) As Van Gogh developed, he carried his contour line over the surface of his forms by means of attenuated brush strokes of pure color, giving his whole canvas a quality of disturbed and violent activity.

Van Gogh used, to the end of his life, the principle of contrasting complementaries to attain the greatest possible brilliance of hue. However, he used hue as it had never been used before—to express a personal symbolism. He used color, not for its appearance alone, but for what it said to him. He spoke of this often. For example, green was to him the color equivalent of "those terrible things, men's passions."¹ He observed nature acutely, with eyes that saw color, but color with an emotional interpretation. Here is one of his comments:

I myself am quite absorbed by the immeasurable plain with cornfields against the hills, immense as a sea, delicate yellow, delicate soft green, delicate violet of a plowed and weeded piece of soil, regularly chequered by the green of flowering potato plants, everything under a sky with delicate blue, white, pink, violet tones. I am in a mood of nearly too great calmness, in

¹ Raynal, Maurice, "Fauvism," History of Modern Painting, Matisse, Munch, Rouault, Albert Skira, editor and publisher, Geneva, Switzerland, 1950, p. 6.

the mood to paint this.¹

As Van Gogh constantly analyzed himself and his emotions, so he constantly analyzed his colors, giving extreme care to the choice and mixing of his pigments, and their effect in his painting. Yellow, love's emblem in his mind, was his favorite color. The brilliance of his glowing wheatfields and sunflower paintings came from his use of the chrome yellows.² He looked at the natural scene, and identified the colors with those on his palette—describing a tree as English red (red ochre), and a sunset as a deep yellow ochre.³

Until the time of Van Gogh, the personality of the artist had not really figured as an element in painting. No one had thought that the expression of an individual's emotions was of any significance. But Van Gogh and Sigmund Freud were born within three years of each other, the sciences were popular, and psychology was the newest of them. So it was that Van Gogh, with his use of color and the expressive line, was unconsciously the forerunner of the self-expressers in the field of art.

Cezanne and the structure of painting. The painting of Van Gogh started a tradition for self-expression in painting. At the other

¹Read, Herbert, (quoting Van Gogh), "The Modern Epoch in Art," History of Modern Painting from Baudelaire to Bonnard, Albert Skira, editor and publisher, Geneva, Switzerland, 1950, p. xv.

²Doerner, op. cit.

³Gordon, op. cit.

extreme of painting procedure was Paul Cezanne. His was the analytic approach. To him, the picture was everything. It never occurred to him to paint a personal or social message, or to tell a story. He considered Van Gogh's painting the work of a madman.¹ As a result of his constant labor in analyzing color, form, and composition, he has become the reference-figure for all modern artists.

For Cezanne, his work was his obsession. "I am consuming myself, killing myself, to cover twenty inches of canvas," he said.² He was constantly dissatisfied with himself. "I could paint for one-hundred years, one thousand years, without stopping, and it seems to me that I would not know a thing."³ He painted for months. One portrait of his friend Vollard required 115 sittings.⁴ He painted his still-lives until the apples rotted and the paper flowers faded.⁵ His observation was acute to the point of pain. "They (Cezanne's eyes) were terrible as they fixed themselves on a point. 'I cannot tear them away,' he said to me one day, 'They are so stuck to the point at which

¹ Sherman, Hoyt L., Cezanne and Visual Form, Part 2, The School of Fine and Applied Art, Ohio State University, Columbus, Ohio, September, 1952.

² Ibid., (quoting Gasquet), p. 147.

³ Ibid., p. 147.

⁴ Loran, Erle, Cezanne's Composition, University of California Press, Berkeley and Los Angeles, 1943, p. 26.

⁵ Sherman, op. cit., p. 48.

I am looking that it seems as if they are going to bleed."¹ He felt he could get to the heart of painting by observing nature.

Perhaps we all paint by conventions, we must come to see the real colours. To do this we must forget what has been already done, and observe nature; do everything from nature, then, by clearing from our sight the vision of our predecessors, we shall perceive a world of new chromatic value.²

It was Cezanne's habit to draw with a line of ultramarine blue, thinned with turpentine, and then to lay in subtly toned values with thin washes of the same color. In developing his composition, he worked into these values with small spots of color, beginning with the cool neutrals, moving over the entire picture plane, varying his colors with every stroke, so that he could bring his whole composition forward at once. "I advance, you understand, all of my canvas at one time— together. There must not be a single link too loose."³ Again, ". . . a colour space is more rich if not laid on in one tone, but composed of many variations and gradations of the same colour."⁴ "Everything," he said, "is in the composition of the colors. Go to the Louvre and see. That is how Veronese composes."⁵

¹Sherman, op. cit., p. 46.

²Gordon, op. cit., (quoting Cezanne), p. 36.

³Sherman, op. cit., (quoting Gasquet), p. 36.

⁴Gordon, op. cit., (quoting Cezanne), p. 36.

⁵Rousseau, Theodore, Jr., Paul Cezanne, Henry N. Abrams, Inc., in association with Pocket Books, Inc., New York, 1953, p. 7.

Cezanne learned the use of color to achieve luminosity from the Impressionists. From them he took the idea of working in basic hues. "Never paint except with the three primary colors and their immediate derivatives," he said.¹ However, Raynal describes Cezanne as one of the painters who lifted the ban of the Impressionists on black and the earthen hues.² Loran lists, among the colors on his palette yellow ochre and raw sienna, green earth, red ochre and burnt sienna, and peach black.³

To Cezanne, the color of the Impressionists had no substance. Speaking of it, he said, "We had to pass through this phase."⁴ It was his desire to make of the art of the impressionists "something solid and durable, like the art of the museums."⁵ To this end, he worked out a theory in which he modelled objects with color, rather than with dark and light. He believed that the "warm" colors—those related to red and yellow—produced the effect of advancing, while the "cool" colors—the bluish ones—seemed to recede. In addition, as a result of his close observation, he considered each object to have a "focal point," a point which was closest to the eye. He proceeded to model

¹ Sherman, op. cit., (quoting from Rewald), p. 93.

² Raynal, op. cit., p. 18.

³ Loran, op. cit., p. 35.

⁴ Sherman, op. cit., (quoting Gasquet), p. 18.

⁵ Loran, op. cit., (quoting Rewald), p. 64.

forms in paint with this warm-cool gradation, placing the cool colors at the edges, and building toward the focal point of each form in a series of color nuances, in little facets of paint, each becoming warmer than the last. This process, which he defended passionately, he called "modulation." Of drawing he said, "Drawing and color are not distinct; as you paint, you draw. The more color is harmonized, the more precise is the drawing."¹ Again, he said, "Tone contrast and relationships are the secret of drawing and modelling."² This last explains the famous "lost and found edges" of Cezanne. Most of his edges were formed by contrast between the figure and ground, but as the eye follows the edge of any object in the painting, the observer realizes that the color and value of the figure are not maintained uniformly. The contrast instead moves from figure to ground and back, and the ultramarine line appears only occasionally when no other contrast maintains the edge. Curiously, this change breaks down the three-dimensional quality within the small locality, and may be partly responsible for the limited depth of the paintings.

For Cezanne worked definitely in three dimensions. He would not consider working without gradation, but his modelling he intended to achieve with color modulation. Likewise, he stated that he tried "to render perspective by color alone."³ Actually, Cezanne did not render

¹Sherman, op. cit., (quoting Gasquet), p. 116.

²Sherman, op. cit., p. 116.

³Sherman, op. cit., (quoting Point), p. 105.

perspective by either of the usual conventions—that is, by neither linear nor aerial perspective. He represented distance entirely from immediate observation, modulating forms and spaces with color, and harmonizing these forms and spaces within his picture plane. Schmidt states that, when Cezanne uses perspective, each plane conforms to its own linear perspective, but there is no coordination between these various perspectives.¹ Schmidt must mean here that the perspectives do not coordinate in conformity to linear perspective conventions. Actually, Cezanne's depth is strictly limited to harmonize with the height and width of his picture plane, so that the effect is somewhat like looking into the inside of a rectangular solid, rather than like looking out a window at an infinite view. As a result of this careful modulation of colors, the forms and spaces are so interdependent that the effect is that of forms being surrounded by a jellied atmosphere—no form could be moved without effecting the stability of all other forms and spaces.

The Fauves

Delacroix, Courbet, the Impressionists, Cezanne—these men developed great traditions of painting structure, concerning themselves with the problems of the picture plane, depth, and color. Delacroix and Van Gogh were instrumental in a tradition concerned with what to

¹Schmidt, op. cit., p. xviii.

say in painting. This tradition branched into many areas. Gauguin painted for the sake of beauty; Lautrec painted his satires by means of the expressive line; Ensor and Redon painted a symbolic dream world; Vuillard and Bonnard turned the intimate objects of everyday life into painted patterns.

By the beginning of the twentieth century, a group of young painters were working again on the classic problems of the picture plane, depth, and color. They had been nurtured on the traditional techniques--and for them this included not only the old masters, but the new ones--the Pleinairistes, the Impressionists, the Post-Impressionists. They came together in 1893 at Julian's, and at Carriere's studio. The leading figure of the group was Henri Matisse, a man who, through his long lifetime has been known as the master of draftsmanship, of form, and color. Joining him were Vlaminck, a great, healthy, rebellious man, primarily an artist, but also a musician and an author; and Derain, brilliantly talented, widely cultured. These three were the heart of the movement. Others joined them: Dufy, Friesz, Marquet, and Braque--in all, about twenty young revolutionaries. They declared their freedom from any discipline and proceeded to tear down all traditions. They not only divorced themselves from local color, they repudiated the colors of nature. Moreover, they threw out three-dimensional form altogether. Instead, they attempted to build structure within the picture plane through the juxtaposition and interaction of pure colors, using these colors straight from the tube, and speaking of "symphonic tonal clashes."

The results of these activities brought horrified reactions from the art public of 1905. The painters were called the "wild beasts"—the "Fauves."

As the movement progressed, and as the artists grew more mature and experienced, they became conscious that, since their art depended on the ideas of the individual painter, it was inclined to run into excesses and blunders. They began to speak of the degrees of intensities of tones, the effect of the relative dimensions of painted surfaces, and even of the control of the third dimension (formerly unmentionable) by means of the relative distribution and intensity of tones. They looked to the work of Cezanne for structuring the picture plane. The undisciplined, revolutionary activity was seeking discipline. The individual artists were taking what they could from Fauvism and going their own way.

By 1911, Fauvism had run its course. Matisse continued his intellectual search for design. His sense of pattern led him into his own style of composition by color spaces. Vlaminck abandoned flat color and worked in the Cezanne tradition of modelling with color. Friesz, a man with unexcelled technical ability and a marvelous teacher, took from Fauvism what he could use, and also returned to the disciplines of Cezanne. Derain, who had liked to paint "dynamite, straight from the tube," nevertheless had an innate sense of order and harmony. He decided that the interplay of pure colors eventually became

"orchestration run amok."¹ Eventually he worked in a highly restricted palette including, according to Gordon, a few degraded greens, ochres, siennas, earthy reds and iron greys. Dufy developed his personal, light-hearted, decorative style which had such an important effect in the fields of fabric design and advertising art. Braque, a Fauve for only a short time, went to an opposite extreme in the use of color. He dropped the brilliant tones, and worked for picture structure by organizing wonderful patterns of grave colors. From these, and together with Picasso, he developed the style called "Cubism."

Conclusion

It must be understood that there is no real "beginning" to any movement in human culture. The backgrounds extend far into antiquity. Yet, there comes a time when more emphasis is placed on one phase than on another. Thus, the traditional approach to painting was object-directed—concerned with local color, and with natural value changes. During the late nineteenth century painting was analytical, but was experience-directed—painters were concerned with the means by which objects were perceived, and with the effect of light and atmosphere and reflections. The modern approach is painting-directed. The composition is all-in-all, its own reason for being. Artists are concerned with the effects of colors and forms on each other within the picture plane.

¹Gordon, ob. cit., p. 127.

CHAPTER IV

THE PAINTING EXPERIMENT

The primary purpose of this investigation has been the exploration of painting by an orderly and valid means. In writing about the potentialities of the various palettes, the author has tried to organize thoughts into a reasonable sequence. However, anyone doing creative work realizes that development in that work often does not occur in reasonable sequence, nor does learning occur according to schedule, nor by way of a plan which previous to the attack seemed logical.

Research into the history of painting reveals much about the principles involved in art, but little that is specific about the means by which artists developed their work. Probably the reason is this: that the principles have been discussed by other artists and critics after the work was done. The painters themselves did not say much about their work. Instead, they painted--struggling first to identify the problems, then to solve them, and so to continue the study. It has, therefore, been difficult to discover the specific color ranges which particular artists have used, and to find their reasons for choosing the pigments, even though this choice was by no means arbitrary, being the physical means by which their compositions were achieved.

After some research, four basic palettes were chosen. The first, the primary-colors palette, owes its original consideration from several sources, including the advices of several instructors. The

second basic palette is based on the Impressionists' system of using the colors of the spectrum. This, too, was altered after research and consideration of the palettes recommended by various instructors. The basic yellow-violet palette is that given by David McCosh, of the art department of the University of Oregon. A study of the Birren color solid supports consideration of this palette. The fourth palette, based on four tones only and ignoring formal color theory, was taken from a small painting by Robert DeWeese, an advisor in the experiment. The range of dark-light and warm-cool tones in this painting (which was originally intended as an underpainting to be developed further in color) prompted further experiment to discover the possibilities of a really limited range of color. Palettes for future study may include the earth colors, and a range of hues planned to be compatible with the phthalocyanine pigments.

In proceeding with the experiment, for each group of colors a chart or scale was made. Each color was mixed with white and arranged on the chart to show comparative values and intensities. Each two-color combination was also mixed with white and so arranged. These charts or scales were made, not as a mechanical exercise, but to gain an understanding of the action of the colors when intermixed. Obviously, this knowledge would come eventually, through painting experience. However, the limited time available for this exploration made it desirable to gain as much working knowledge as possible, in as orderly a way as possible, so that the real painting problems might be faced without the confusion of not knowing exactly what the colors would do to each other in simple combinations.

The Primary-Colors Palette

The primary-colors palette was chosen as one which might supply the beginning of a knowledge of colors to the student. It is based on the theory that all colors are derivatives of red, yellow, and blue, with changes in value from black (or its equivalent) to white. Robert Henri, in a letter to a class in painting, recommended the exploration of the primary colors as a beginning of color study.

Get a right height of chair and sit at your painting table. Take as true a Red, Yellow and Blue as you can choose. Mix neighbor with neighbor until you have three new notes, Orange, Green, Purple. Set all six in a line, and mix neighbor with neighbor until you have six more--RO, OY, YG, GB, BP, PR. You have now before you a homogeneous palette . . .

This is a first step taken in the direction of an acquaintance with the possibilities of pigment colors.¹

In another letter, he discussed research in art as follows: "I am not proposing a 'scientifically hampered' artist, but one who is unhampered by ignorance, who understands well the means he employs."²

Referring to notes made from a conversation with McCosh, the author used as a first palette the following: cadmium yellow medium, alizarin crimson, ultramarine blue, and burnt sienna, together with white. In this color range, the three primary colors supplied, when mixed, an extraordinary range of hue. Burnt sienna used with ultramarine gave a dark tone which supplied the equivalent of black without

¹Henri, Robert, The Art Spirit, J. B. Lippencott Co., Philadelphia & New York, 1951, p. 37.

²Ibid., p. 119.

its deadening effect, and when used with alizarin made possible a deep, warm red.

The painting shown in Figure 1, Appendix II, was constructed using the primary-colors palette.

A variation of the primary-colors palette was worked out at the recommendation of Jessie Wilber, an advisor in the investigation. The ultramarine blue was changed to cobalt blue, a much lighter hue, and to compensate for the loss of deep value, burnt umber was substituted for burnt sienna. This, in turn, brought about a change from cadmium yellow medium to cadmium yellow light. The range was now: cadmium yellow light, alizarin crimson, cobalt blue, burnt umber, white.

A third variation of this basic palette might consist of cadmium yellow light, alizarin crimson (or cadmium red medium), viridian, and ultramarine violet, together with white and black. In this case, the violet and green combined produce the blue tones.

Figures 2 and 3, Appendix II, show paintings using this version of the primary-colors palette.

The variation possible with a primary-colors palette is evident when considering the paintings of Cezanne, who insisted that the artist should never use any but the three primary colors and their immediate derivatives. The palette of Cezanne, according to Loran contained the following:¹

¹Loran, Erle, Cezanne's Composition, University of California Press, Berkeley and Los Angeles, 1943.

Yellows

Brilliant yellow
 Naples yellow
 Chrome yellow
 Yellow ochre
 Raw sienna

Reds

Vermilion
 Red ochre
 Burnt sienna
 Rose madder
 Burnt lake

Greens

Emerald green
 Viridian
 Green earth

Blues

Cobalt blue
 Ultramarine blue
 Prussian blue

Peach black

Silver white

It is the character of the primary-colors palette that while it can be made to supply adequate variations of both color and value, neither quality is inherent in the palette. Both color and value can be attained only by the conscious activity of the artist. It is particularly valuable as a color-mixing palette for those students who will continue their studies to later discover the function of intensity and dark and light in the structure of painting. The great economy of the primary-colors palette is an important advantage.

The Spectrum Palette

The spectrum palette as used by the Impressionists was based on the idea that the range of colors which make up white light is the most complete and brilliant possible, and can be made to give to the picture some of the quality of light. Robert Henri, who was educated in France just before the turn of the century—at Julian's, where so many of the greats in painting met—was particularly concerned that his students work with a well-chosen palette, corresponding to the colors of the rainbow.

Your regular stock of colors should be as nearly as possible a well balanced

Red	Red-orange	Orange	Orange-yellow	Yellow	Yellow-green
R	RO	O	OY	Y	YG
Green	Green-blue	Blue	Blue-purple	Purple	Purple-red
G	GB	B	BP	P	PR

in correspondence with the spectrum band, and with these you may have pigments that will serve as neutrals.¹

Rutter lists, as a specimen palette of a representative Divisionist (Pointillist) the following: white, cadmium yellow, vermilion, madder lake, cobalt violet, ultramarine, cobalt blue, emerald oxide of chromium.² This group of colors was chosen as the basic spectrum palette.

¹Henri, Robert, The Art Spirit, J. B. Lippencott Co., Philadelphia and New York, 1951, p. 19, 20.

²Rutter, Frank, Evolution in Modern Art, The Dial Press, New York, p. 45, 1926.

The spectrum palette is entirely a palette of hue, rather light and bright in quality. While Cezanne used a primary-colors palette, his theories had, perhaps, the greatest effect on the uses of the pigments in the spectrum palette. It was his belief that the cool colors (those tending toward blue) had the effect of receding, of going away from the observer into the picture plane, while he believed that the warm colors (those tending toward red and yellow) had the effect of coming forward. He modelled three-dimensional form exclusively by modulating from warm to cool. Less discerning artists have taken this convention and used it to paint "cool" shadows and "warm" lights. This has become a rather common concept.

Two paintings, shown in Figures 4 and 5, Appendix II, were developed using the spectrum palette.

It will be noted that the basic spectrum palette contains no black, nor any of the earth colors which might have a neutralizing effect, but uses only the highest intensity hues. These were the colors which served the Impressionists for attaining the greatest possible brilliance in their painting. Van Gogh, however, brought black back into the range, although he did not use it as a neutralizer. (Van Gogh used a primary-complementary palette entirely.) Cezanne added the ochres, the siennas, green earth and black. The Fauves, early in the movement, used only the shrillest of pure colors, not even mixing them, but eventually the individual painters realized the value of the grave colors. Since then, the use of the spectrum palette

supplemented with the earth colors and black has become common practice. Robert Henri, who through his teaching had a profound effect on American painting, spoke of the effect of the neutrals as follows: "The effect of brilliancy is to be obtained principally from the oppositions of cool colors with warm colors, and the oppositions of grave colors with bright colors. If all colors are bright, there is no brightness."¹ Such a combination was recommended by Will Barnet, guest instructor at Montana State College. His palette contained the following: white, cadmium yellow light, cadmium orange, cadmium red light, burnt sienna, alizarin crimson, viridian, cobalt blue, ultramarine blue, yellow ochre, raw sienna, raw umber, burnt umber, and black.

¹Henri, Robert, The Art Spirit, J. B. Lippencott Co., Philadelphia and New York, 1951, p. 36.

The Yellow-Violet Palette

This color range, based primarily on the opposition of yellow and violet, was brought to the attention of the author while she attended summer session classes under a guest instructor at Montana State College, David McCosh. Its validity is supported by the color solid of Faber Birren, whose key feature is the value difference between yellow and violet. The palette as presented by McCosh consists of cadmium yellow light, yellow ochre, burnt umber, manganese violet, mars violet, viridian, and alizarin crimson.

This range of colors has many interesting qualities. It is based on yellow, at highest intensity the lightest color in the spectrum, and violet, the darkest. Yellow in its various values varies so greatly in its effect that it changes its name at different levels—cream, tan, gold, brown. Violet has an unstable color character, being a blend of two colors. It never settles down to being one or the other, but vibrates. It is found everywhere in nature, although seldom at high intensity, and has a quality which can be used to unify other colors. (Blue, commonly thought of as a color for "shadows" actually remains blue at all values, and does not therefore have this unifying quality.) Violet acquires this unifying quality from the fact that it is the complement of yellow, and is a step between red and blue.

Since the darks of the yellow-violet palette have a warm tone, three-dimensional form can be built on the principle of the warm shadow, cool light—a convention having a quite different effect from the traditional cold shadow, warm light concept. The result is a greater

preservation of the flatness of the picture plane, since the warm dark shadow does not sink into the picture plane as does the cool shadow, nor does the cool light jump out as much as the warm light.

The paintings shown in Figure 6 and 7, Appendix II, were painted with the yellow-violet color range.

A second yellow-violet palette may consist of cadmium yellow, cadmium orange, burnt sienna, ultramarine violet, viridian and white.

The painting illustrated in Figure 8, Appendix II, was constructed with this variation.

The yellow-violet palette has the advantage of being essentially both a color and a value palette, with a possible range of both high and low intensity tones. Its pigments are such that a great range of warm and cool colors can be produced. For these reasons, while it is valid for extensive research for the advanced student, it is particularly valuable for the person who is not primarily an artist, but who wishes an understanding of the meaning and process of painting.

The Four-Tone Palette

Painting structure is based on the distribution of value areas over the picture plane together with the interaction of intensities of hues and warm-cool tones within the value locality.

A fourth basic palette was discovered when examining a painting of one of the advisors, Robert DeWeese. This painting was originally conceived as an underpainting, to be subsequently covered with colored glazes. The colors used were apparently white, black, yellow ochre and burnt sienna, painted over a brown ground (masonite). This limited palette gave a surprising range of value and intensity.

The specific pigments chosen for this color group were ivory black (a cool black), titanium-zinc white (the most brilliant white), yellow ochre and burnt sienna. In painting, it was found that an almost complete range of light-dark and warm-cool could be worked out, one light being cool (white), while the other was warm (yellow ochre), and one dark (black) being cool, while the other (burnt sienna) was warm. The intensities of each of these colors is naturally high, while in mixture they tend to grade each other. Thus, as compared to the primary-colors palette, which can give a relatively complete range of hue, the four-tone palette gives a great range of value, intensity, and warm-cool effect. Moreover, because of the extreme limitation of hue, the artist is forced to substitute these qualities for local color, and so can come closer to an understanding of basic painting structure.

The paintings illustrated in Figures 9 and 10, Appendix II, were based on the four-tone palette.

CHAPTER V

CONCLUSION

Many individuals inexperienced in painting come to the study with certain standardized concepts. For example, the novice has a much simplified idea of the colors of objects--the sky is blue, grass is green, tree trunks are brown, and flesh is pink except in the case of a sun tan. These ideas are undoubtedly influenced by the popular crayon box of sixteen colors used by most children, and the standard brightness of tempera paints used in schools. While the novice has probably at some time in his education encountered the color wheel, his idea of color harmony rests on the fact that he knows what he likes, and that some colors "fight." He is entranced by drawings which exhibit "shading," or the modelling of three-dimensional form, and is therefore delighted when he discovers that he can paint in color and simulate this roundness of form by adding white and black to his pigments. While these concepts may be valid within their limitations, they do not actually refer to the elements of painting.

Painting is a construct in which the elements involved react upon each other in somewhat the same way as mathematical operations react upon the figures involved, or as sentence structure reacts upon and organizes thought. Grass may certainly (but not necessarily) be green, but a green highly differentiated and containing many other colors, as the Impressionists learned. But the problem in painting is to so adjust or change the green that it takes its proper place as an

element in the painting organization. Color harmony and color vibration (the "fighting" on which the Fauves based their productions) become extremely complex as the active effect of color on color is realized. The "shading" of form, technically wonderful as it can become, is incident to the value organization of all the forms within the picture plane. These things are true regardless of the message of the painting. They can be realized only after many experiences in discrimination. It has been the intention of the author to search for a means, through the use of particular color ranges, by which the beginning painter can to some extent avoid confusion and realize these problems, since only by clearly understanding them can he find any solutions.

In reference to her own painting development, the author has found that the study of painting by means of particular color ranges has, by requiring concentration on the interaction of specified colors, eliminated much confusion and floundering, and has helped give direction to her work.

As an aid in the understanding of painting problems for the beginning artist, it would appear that a particular color range can help point out these problems. First, by using a small number of pigments, the action of the colors on each other can be more accurately realized. Second, the painting problems may be faced more directly if some of them are strictly limited, not by rule, but by the means of expression.

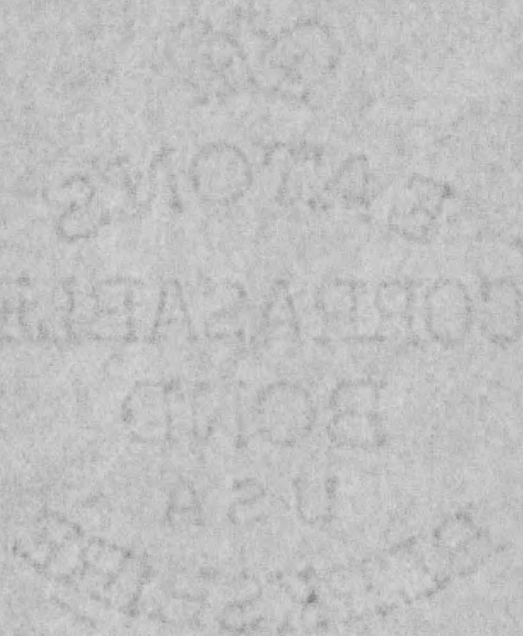
Of the palettes studied, it would seem that the four-toned palette might be helpful to the beginner, since it contains great ranges in light-dark tones, warm-cool tones, and intensities, while it eliminates the problem of local color. It has the advantage of being economical, but it is possible that this color group might, to the beginner, seem to lack glamour. The author would be interested in observing the effect of its recommendation to a group of students.

The basic yellow-violet palette might be effective for both beginning and advanced students. Using this range, painting may be approached from the viewpoint of value distribution applied as color over the picture plane, and also from the viewpoint of form constructed on the principle of warm-shadow, cool-light.

The primary-colors palette is, by its nature, a color-mixing palette, and has the disadvantage of implying that hue, and therefore local color, is the central idea of painting. For this reason, the author feels that the palette itself will not directly help the novice, although its possibilities for more advanced students are surprising in scope.

The spectrum palette does also have the disadvantage of appearing to emphasize local color, but because of its greater range, especially when the earth colors are added, it is more adaptable. It is particularly useful when used as the Impressionists used it, to develop color differentiation on forms. For the mature painter its possibilities are unlimited.

The above remarks do not in any way imply that the use of particular color ranges will constitute a formula for producing paintings.



APPENDIX I

DIAGRAMS OF COLOR SOLIDS¹

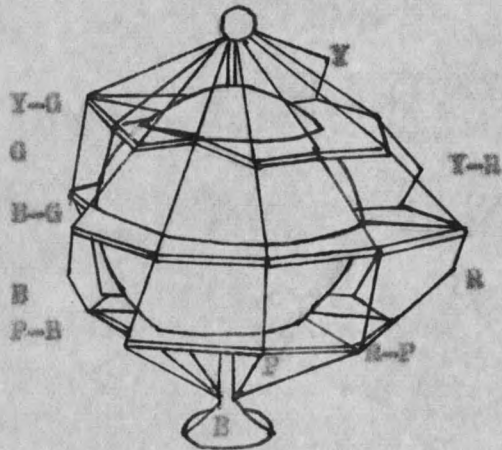


Fig. 1 The Munsell Color Sphere

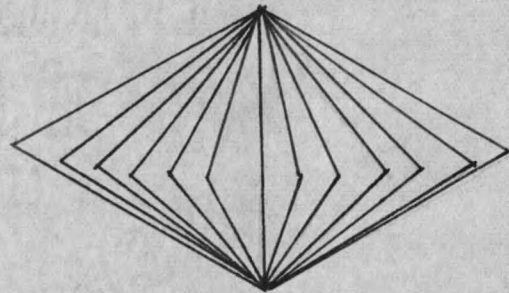


Fig. 2 The Ostwald Color Solid

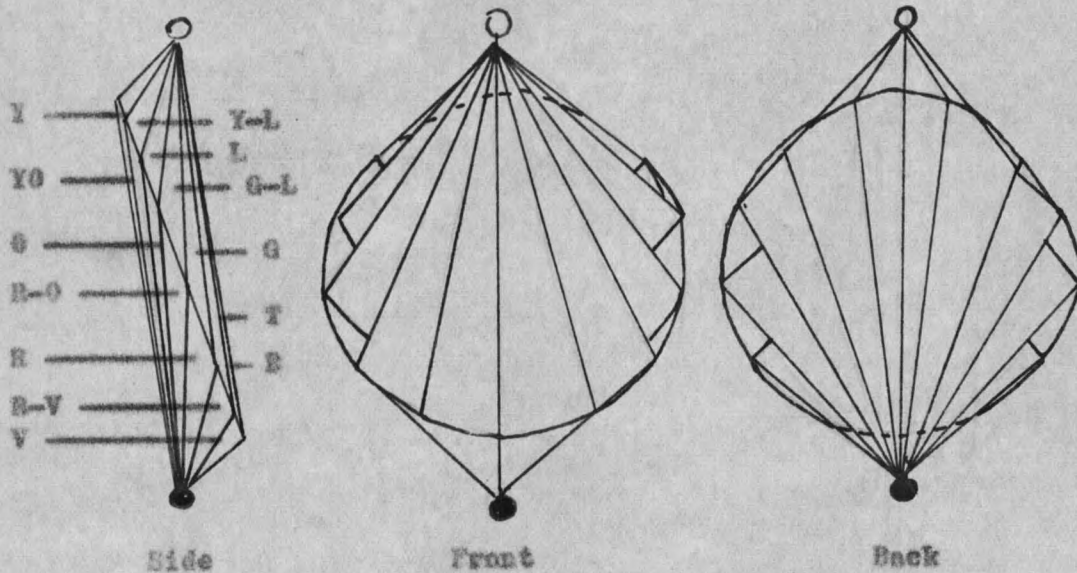


Fig. 3 The Birren Color Solid

¹Birren, Faber, Color Dimensions, The Crinson Press, Chicago, 1934, pp. 6-9.

APPENDIX II

COLORED SLIDES OF PAINTINGS

Following are colored slides of ten paintings developed with the four basic palettes discussed in the text.

- Figure 1 Still Life with Carved Head
- Figure 2 Park with Maples
- Figure 3 Picture Gallery
- Figure 4 Still Life with Blue Bottle
- Figure 5 Still Life with Crown Bottle
- Figure 6 Still Life with Potted Plant
- Figure 7 Back Yards with Apple Tree
- Figure 8 Still Life with Coffee Pot
- Figure 9 Still Life with Fish Kite
- Figure 10 Still Life with Mandolin

APPENDIX III

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Foss, I. A. The effect of limited palettes on the structuring of painting.	
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