



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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TABLE OF CONTENTS

	Page
TITLE PAGE	1
ACKNOWLEDGEMENTS	3
ABSTRACT	4
CHAPTER I. INTRODUCTION	5
Statement of the Problem	5
Justification for the Study	5
Objectives of the Study	7
II. STATEMENT OF THE ESSENTIAL PROBLEMS OF PAINTING	9
III. REVIEW OF THE HISTORY OF THE FUNCTION OF COLOR IN PAINTING	11
Symbolic and Decorative Color in Early Civilizations	11
Transparent Color to Enhance Dark and Light in the Renaissance	11
The Nineteenth Century, and New Dimensions in Color	13
Color Theories and Their Relation to Painting with Pigments	15
The Impressionists and the Painting Revolution	21
The Post Impressionists, and Two Traditions	26
The Fauves	33
Conclusion	36
IV. THE PAINTING EXPERIMENT	37
The Primary-Colors Palette	39
The Spectrum Palette	42
The Yellow-Violet Palette	45
The Four-Tone Palette	47
V. CONCLUSION	48
APPENDICES	
I. Diagrams of Color Solids	52
II. Colored Slides of Paintings	53
III. Literature Cited and Consulted	54

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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.

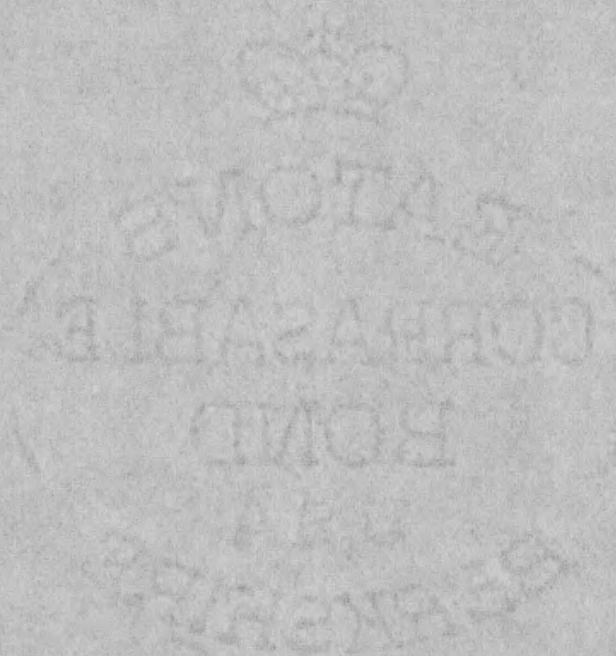
¹Ibid., (quoting Constable, from a note dated June 16, 1836), p. xvii.

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 superior 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

¹Schmidt, 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 Biconical 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

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

