THE BASIC FACTORS INVOLVED IN A SPACE ARTS CURRICULUM

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TABLE OF CONTENTS

Introduction..... 1

The Problem..... 4

Current Status of the General Problem..... 6

Methods of Procedure Used in this Study..... 13

Interpretive Viewpoints from varied Cultural Sources. 15

Psychological and Educational Viewpoints..... 17

Philosophical Viewpoints..... 27

Constant Factors of the Art Experience..... 38

Line..... 42

Line Expressions..... 46

Shape..... 51

Shape Expressions..... 52

Decoration..... 54

Use of Decoration..... 55

Differing Types of Decoration..... 57

Light and Dark..... 60

Form and Space..... 63

Sculptural Form..... 64

Techniques of Sculptural Form..... 64

Form and Space in Painting..... 67

Color..... 73
Physical Explanation of Color..... 73
How Light is altered..... 75
Refraction and the Spectrum Band..... 75
Absorption and Reflection..... 76
Color Theories..... 77
Light and Pigment..... 79
Pigment Theory..... 79
The Color Wheel..... 80
Fundamental Color Sensations..... 82
Intermediates..... 83
Complements..... 84
Conclusions..... 86
Bibliography..... 93

ILLUSTRATIONS

Linear Expressions..... 43

Types of Linear Expressions..... 45

Line Types and their Development into Shapes..... 50

Shape Expressed by Vase Contours..... 53

Shape Designs showing Environmental Influences..... 59

Sculpture illustrating Cutting In Technique..... 65

Sculpture illustrating Building Up Technique..... 66

Depth created by Shading and Perspective..... 69

Conflicting Color Theories: Light: Pigment..... 78

The Color Wheel..... 81

Introduction

In co-operation with the Carnegie Foundation, the University of Oregon is making a study of the social values involved in appreciation of the arts. By art appreciation is meant more particularly the appreciations involved in the arts of music, the art of literature and the space arts. It is the belief of those undertaking this study that the appreciations exercised in art and nature appreciation have an outstanding social value. This value is interpreted as possessing the ability to develop, encourage and vitalize the emotional life of our contemporary society. Added significance is given to this aim because of the changing economic status of the American social order. Decreased hours of employment mean increased hours of leisure. Advantageous use of leisure is interpreted as allowing greater emotional expression and enjoyment. It is believed that the arts of music, literature and the space arts furnish such possibilities of enjoyment and expression.

To understand more definitely the full scope and objectives of this study as conducted by the University of Oregon we shall quote from the objectives as stated by the Annual 1932 Report of the Art Appreciation Survey:

In the fields of literature, music and the graphic arts,

1. To analyze the factors of the aesthetic experience in each field for the purpose of

   a. clarifying the meaning of the term "appreciation",

   b. isolating the factors upon which power of appreciation is dependent, and

   c. refining methods of teaching

2. To determine the possible relationship between desirable social attitudes and ability to judge aesthetic values in each of the three fields." [1]

To further clarify the objective of "refining methods of teaching", the Committee managing the project has deemed it advisable to formulate a teaching philosophy based upon experimental knowledge of the experiences involved in[2] appreciation. To quote further from the Committee in charge:

So that we may know:

1. What the appreciative experience is in terms of scientific knowledge:

2. What it is in terms of aesthetic theory:

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[1] Manuscript of The Annual Report of the Art Appreciation Survey, July 1, 1932, University of Oregon, on file in the University Administration Offices.

[2] Subvention Request from the University of Oregon to the Carnegie Corporation of New York, for the support of research in the appreciation of art and nature, prepared by R. W. Leighton, University of Oregon, September 1, 1932, on file in the University of Oregon Administration Offices.

3. How it may be cultivated:

4. Its place in an educational scheme; and

5. The human relationship that exists between student and teacher in this field of work.

THE BASIC FACTORS INVOLVED IN A SPACE ARTS CURRICULUM

1. The Problem

The varied fields of art appreciation as previously specified are being studied as special projects by the departments involved. This study will deal only with the space arts.

In the study of the space arts at the University of Oregon, Mr. Zane, working in the appreciational field of the space arts, has developed "Perception and Judgment Tests".

The present study deals particularly with refining teaching methods and determining the nucleus about which a space arts curriculum may be constructed. It regards the space arts as a fertile field for creative and appreciative expression. It believes that creators and appreciators, although varying in their responses, are dealing with certain constants in the realm of visual experiences. It believes that these constants must be carefully selected from authoritative sources in the art field and that such selection must successfully integrate with accepted educational viewpoints. For practical purposes these constants of the space arts must be general enough and pliable enough to form the nucleus of either a creative or an appreciative approach to the space arts.

John Dewey says:

> We have no word in the English language that unambiguously includes what is signified by the two words "artistic" and "esthetic". Since "artistic" refers primarily to the act of production and "esthetic" to that of perception and enjoyment, the absence of a term designating the two processes taken together is unfortunate. Sometimes, the effect is to separate the two from each other, to regard art as something superimposed upon esthetic material, or, upon the other side, to an assumption that, since art is a process of creation, perception and enjoyment of it have nothing in common with the creative act. In any case, there is a certain verbal awkwardness in that we are compelled to use the term "esthetic" to cover the entire field and sometimes to limit it to the receiving perceptual aspect of the whole operation. I refer to these obvious facts as preliminary to an attempt to show how the conception of conscious experience as a perceived relation between doing and undergoing enables us to understand the connection that art as production and perception and appreciation as enjoyment sustain each other.

The aim of this study is to determine those constants of the space arts experience which may guide either the student seeking an "artistic" or "act of production" guidance, or the student who is seeking an "esthetic" or a perceptual and appreciational enjoyment guide. It is therefore concerned with part C of division one of the general objectives as stated in the introduction.

11. Current Status of the General Problem

Art education is becoming of increasing importance as a significant part of the new curriculum which stresses those studies of a social science type. That this trend is significant and impelling is evidenced by the monograph by Frederick P. Keppel in the report of the Hoover Commission on "Recent Social Trends".

Keppel says:[1]

> To say that art is "in the air" today has a vague sound, but if true it represents a situation very different from that which prevailed a decade ago. Certainly current commencement addresses and other public utterances of similar character are much more likely to contain references to the aesthetic side of life. Skilled program makers today give renewed emphasis to literature, music and other arts in their offerings. Such modern symposia as those recently edited by Charles Beard, the Encyclopaedia of the Social Sciences now appearing, the objectives for social studies in the public schools formulated by a Committee of the American Historical Association, all deal more seriously with the arts than did historical and sociological studies of even a decade ago. Also significant is the evidence that in general it is the people who are recognized as forward looking in other respects who are showing active interest in the application of art to their daily affairs, in elementary and higher education, in department stores, advertising offices and factories, in social groups and political units.

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[1] Keppel, Frederick" The Arts in Social Life" Recent Social Trends, McGraw, Hill Book Co., New York, 1933 P. 1003

The report further proceeds with the status of the arts in the social life of the United States, proceeding from a historical survey of the past to the present. The widespread influence of art on industry, on civic planning and home life is stressed, as well as the influence of the arts on education. The ever increasing influence of the arts in American social life is indicated by the rapid growth of museums, endowments, etc.

During the years from 1876-1893 there was in America a definite reaction from the scorn of refinement so characteristic of Jackson's day and a general trend toward an awakening of interest in intellectual and artistic attainments.

From 1893 to 1918 there was a still greater and more materially marked development. This was shown by the beginning of large gifts and endowments; marked of which were the Carnegie fund and the Rogers and Altman bequests in New York, both of which indicated the recognition and the need of advancing our own peculiarly American culture and the responsibility of the vested interests to so promote its growth. In Boston this reawakening of public interest was marked by a re-birth of interest in handicrafts.

The Hoover Report continues, "We were either shocked or amused at the modern paintings displayed in New York in the so-called Armory show of 1913, but we were interested as well."[2]

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[2] Ibid, 962.

This interest was further reflected by the museum movement, which advanced from a total of 76 museums in 1890 to an average of one museum in every city of the United States having a population of 250,000 in 1933. During the past twenty years the amount of capital invested in art museums throughout the country has risen from $15,000,000 to more than $58,000,000.

A general survey of the purposes promulgated by this widespread museum movement seems to resolve itself into three major functions, which are (1) the acquisition and preservation of objects (2) the advancement of knowledge by the study of objects and (3) the enrichment of the public through the diffusion of knowledge and opportunities for aesthetic appreciation. The general tendency, although taking all three of these objectives into consideration, shows a marked trend towards emphasizing dominantly the third function.

That this trend of public interest in art has also been extended into the practical fields of public use and demand is shown by the figures put out in 1929 by the Biennial Census of Manufacturers. This report, taking the index number of 100 as of 1925, shows that the sale of statuary and art goods increased from an index of 59.5 in 1919 to 102.6 in 1929. It further states that importations classified as art goods increased from 51.3 in 1919 to 167 in 1929. The American Art Dealers Association likewise reports that art gifts to the public have amounted in the United States in 1931 alone to $136,000,000 .

A problem now confronting public education in the United States is centering about the problems of striking a balance between what will most profit the child and how much the public finances should contribute toward that end. In general, elementary education is most favorably inclined towards the arts; the emphasis of interest being not so much in what the child creates as in the child himself. Most experimentation, however, in this behalf has been conducted in endowed private schools..

According to this report, the leadership in secondary art education lies, however, not so much within the realm of privately endowed schools as within the public schools. From 1922 to 1928 the percentage of high school students enrolled in art courses rose from 14.8 in 1922 to 18.6 in 1928.

The Hoover Report gives credit to "the pressure of changed public opinion, and to a belief in the social, economic and educational values of art, rather than to exercise of leadership within education itself, either on the part of art teachers or of the directing heads of schools or colleges."[3]

The growth of art education in colleges was most rapid between the years 1920 and 1925. In 1920 the popular belief was held that art was essentially a girl's subject (a belief which still persists among too many of our high school boys). However, the registration in art courses grew at Harvard from 541 in 1920 to 769 in 1925, and to 1217 in 1930. Other men's institutions, such as Yale, Dartmouth, Princeton, etc., showed a similar increase in enrollment. During the past decade the

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3 Ibid 967

colleges have shown a 400 per cent increase in enrollment of professional art students, as against a 50% increase in total enrollment.

Colleges, however, are still hesitant, states the report, and unwilling to recognize and accord a place to any subject not wholly intellectual. The preponderance of college courses are still historical. The report of Parnassus[4] in 1931 would tend to bear out this assumption. This report lists as subject matter in researches published in 1931 a total of 48 dealing with medieval subject matter, 22 dealing with Renaissance material, and only one dealing with modern subject matter.

To continue with the summary of the Report, it marks as trends that (1) Art has gained in the last five years (2) that individual art interest is spotty (3) that educational texts deal more seriously with art education (4) that the breakdown from tradition is gaining in tolerance.

The Hoover Report after thus summarizing present conditions makes the following predictions relative to the art trend during the next five years. They are in substance as follows:

1. There will be created new art forms due to unsettled economic conditions, new processes and new materials. Particularly, there will be a further development of the color organ, vibratone, and studies in vacuum music.

2. The influence of industry and manufacturers will continue, with emphasis upon and further development of typical design.

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[4] Ibid, 970.

3. Formal education has tried its best, but "missed the bus". During the next five years there will be an attempt to catch up with emphasis upon "less teaching and more learning how". Due to the development of authoritative tests, we shall be better able to discern genius. The old insistence that we keep art education and education in other fields completely apart will tend to disappear. The colleges, museums will show new life and we shall see great progress in art education on the secondary and adult levels.

4. There will be a higher standard of appreciation on the part of the American people. Because of television much of the inequality of opportunity in country and city will be eliminated. There will be more widespread knowledge and practice of the arts.

5. In order to encourage genius and ability there may be greater economic reward for those engaged in the fine arts. Industrial design offers a fruitful field.

6. Town and regional planning, that is, zoning, design protection etc., will be regarded as a sound social investment for which the public will be willing to pay.

7. Art factors will influence interracial and international feelings and judgments.

8. Cultural thinking will put Art into practice as well as thinking. Art will be recognized as a form of social intercourse which offers to the individual as well, balancing factors which can be set against the strains of a mechanized civilization.

These trends, as specified by the Hoover Report, are of vast importance to art educators. It is essential that if art education is to be a significant part of the public school curriculum, it must be concerned with these points as outlined. Art must raise the appreciational level of the younger generation and also sustain and foster creative ability as it may appear. The larger educative group will be art appreciators; a small percentage, art creators. Both are a necessary part of our contemporary civilization. The school cannot afford to neglect either group.

Chapman and Counts[5] say on this subject:

> Hence, wherever there is great creative work, there is a cultivated people to provide the stimulus; and wherever such work is absent, the explanation can usually be found in a people undeveloped on the esthetic side. For its immature members the group provides the foci of attention; it sets the goal to be striven for; it determines the direction taken by genius in expressing itself.
> . . . [6] . . . . . .
> The great educational task is not that of training the genius; rather is it that of creating and fostering in the masses, the source and inspiration of talent, a growing consciousness of and interest in beauty.
> . . . . . .
> [7]
> Standards of appreciation cannot be handed from teacher to pupil, like physical objects, neither do they appear unheralded and in mature form at the behest of desire. They are creatures of growth, products of life's guages of experience.

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[5] Chapman and Counts. Principles of Education Houghton Mifflin Co., New York, 1924. P. 318.

[6] Ibid, 319

[7] Ibid, 321

III. Methods of Procedure Used in This Study

The present study has been approached through several channels. The first two methods of approach may be considered as of the survey type, whereas the third method is philosophical in nature. These methods are outlined as follows:

a. Analysis of the varied phases of the space arts experience

As the objective of this study is to determine constant elements of the space arts experience, it was necessary to recognize the varied approaches which individuals might make in interpreting or realizing such experiences. These approaches are in substance creative and appreciative; emotional and intellectual. It was deemed necessary to determine significant viewpoints of writers relating to these various aspects of the space art experience.

b. Survey of the salient viewpoints of specialists in the above fields.

This necessarily included viewpoints of specialists in the fields of education, art criticism and esthetics, sociology, philosophy and psychology, and also the viewpoint, if possible, of the creative artist.

c. Writers' synthesis of trends to form the basis of a space arts curriculum.

Whereas the first two steps are analytical in character, the third and final step is synthetic. It consists of a placing together of the analytical and survey methods of steps a and b and drawing specific conclusion from these analytical implications. The basis for determining the fundamental factors of a space arts curriculum is influenced by a comparative study of the writings of the various outstanding writers in the fields mentioned. With this background of viewpoints the attempt is made to extract definite material which is of practical and suitable character to form the nucleus of the space arts curriculum.

There is no consecutive handling of these three phases of the study, but there is an attempt to weave together viewpoints which are introduced whenever they bear upon some particular aspect of the problem.

IV. Interpretive Viewpoints from varied Cultural Sources relating to the general field of the Space Arts

Although receiving approbation from educational leaders, there is probably no subject of the modern school curriculum so neglected both in subject matter and teaching procedure as is education in the space arts. Accepted by modern educators as an important part of the social science group, the visual arts have received little attention of a practical nature. Contemporary viewpoints which exist as a working basis for those interested in the practical construction of a modern art curriculum must be derived in the main from several sources of thought. One important branch of thought is philosophical in nature. The philosophical group of most importance to art education is composed of educational and esthetic philosophy. Another contemporary influence of great importance is that of educational psychology. This branch of thought is particularly vital for its contributions concerning the learning process and also for its analysis of the appreciational attitude. From this latter group we are able to obtain objectified tests dealing with esthetic judgment. Although these tests are still in the formative stage, they do give a certain definition and objectification of appreciational aim heretofore lacking.

Thus it is in the main to these groups that art

educators must look to extract significant viewpoints. Although varying in emphasis, these viewpoints do show definite trends which education in the space arts may follow. The most significant implications lead to the conclusion that the art experience is a part of our social heritage possessimg its own peculiar function in promoting contemporary culture and enriching individual modern life.

"Every human being as he goes through life builds out of his experiences a pattern of personal interests."[1] It is the function of education to enrich these experiences, leading to a complete and well rounded maturity.

There seems to be definite proof that art is becoming a potent factor of education and is no longer considered a frill or an esthetic appendage of the financially elite. Following is an extract from the "Report of the Hoover Commission on Social Trends":

"Thus education in the arts, long left to shift for itself in the art school or conservatory or in the unsupervised classroom, has by the march of events been drawn more closely into the general stream. It is today faced with a triple task; to meet new individual, social and vocational demands; and to adjust itself to the rapid shift in esthetic standards which we call modernism."[2]

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1 Folsom, Joseph Kirk. Culture and Social Progress Longmans, Green & Co., New York, 1928. P. 405

2 Keppel, F."The Arts in Social Life." Recent Social Trends in the United States, McGraw,Hill, 1933. P. 972

A. Psychological and Educational Viewpoints

It has been said that one of the outstanding characteristics of the age in which we live has been the general disposition "to study first principles and general laws."[3] Art education has not escaped this tendency.

Psychology has attempted to explain the creative mind and the human perceptions and emotions aroused by a work of art. It has focused attention upon the following points, namely (1) in learning what forces in the artist's personality lead him to create (2) In understanding the process of appreciation (3) In discovering the relationship of creative and appreciative experiences to general human experiences and to the human organism. Psychology has contributed to aesthetics by indirectly strengthening the belief that art and aesthetic experiences may be understood on the basis of the scientific explanation of natural phenomena. Munro has to say on this subject: "The rapid success of experimental psychology in adapting scientific method to a study of complex and variable phenomena, has encouraged the belief that not even the most subtle phenomena of art and emotional life can remain forever mysterious. To take the place of the vague dogmas of idealistic aesthetics, there is an increasing demand for a

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[3] Wilenski, R.H. The Meaning of Modern Sculpture F. Stokes, New York, 1932. P. 5

naturalistic answer to every problem encountered in the arts."[4] This, at least, has given educators the courage to tackle what was once deemed an impossible task.

Psychology has likewise shed light upon many mental mechanisms, such as the scientific explanation of empathy, habit, emotion and the learning process, which are believed operate in aesthetic experiencing as in other forms of behavior.

Physiological psychology in attempting to describe the course of sensory stimuli through perceptive and affective centers and resulting in rhythm and equilibrium may help explain what happens when we respond to such stimuli as jazz, etc. However, the complexity of these as they occur in reaction to an art stimuli are not so easily explained. Psychology has added little to the understanding of volition and emotion. The Behaviorist would have us believe that emotion is unskilled behavior and is simply the expression of unskilled energy output. The Gestalt school believes that emotions are mental experiences occurring when the activity of the organism is vigorously directed towards some goal. Purposive psychologists would associate emotion with interest. The psycho-analysts believe emotions furnish a driving force and that art is the sublimation of emotion. All of which leaves aesthetic education little authority for directing the emotions.

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[4] Munro, Thomas. The Scientific Method in Aesthetics W.W. Norton & Co., New York, 1928.

Much more has been done to clarify the processes of perception, recognition and memory, which also are important factors in the aesthetic experience. The danger of applying the labaratory method too vigorously is that the scientist may lose sight of the wholeness or oneness of the experience. For instance, two colors placed side by side may have one effect, whereas in a color pattern, involving area, juxtaposition of other colors, or a whole pattern, the effect would be quite different. In other words, the labaratory scientists, dealing in parts or fragments, must not try to draw general laws involving the whole situation plus the peculiar reaction of certain organisms. The conclusions must be regarded simply as what they are - the experimentation of parts in an artificial environment - they may or may not relate to the whole situation.

Psychology has influenced aesthetics greatly by its conclusion that standards of beauty and artistic preferences are produced by a combination of social environment and individual differences, and that they are neither fixed nor universal. It has also contributed much by explanation of the processes of reasoning, learning, and valuation, where the concensus of opinion points toward a motivating organic impulse, rather than a purely logical, formal process. "Intelligent choice is conceived as a process of trying to foresee the results of various possible alternatives in action. This trend in psychology has gone along with the pragmatic doctrine that scientific and philosophic thinking,

including moral and aesthetic valuation, are not only practical in origin, but should be more consciously devoted to practical ends."[5]

Let us contrast the more general attitudes as expressed by Behaviorism and Psycho-analysis in the realm of aesthetic psychology. The basic contention of Behaviorism is that data be derived from observation of overt actions of organisms and that the higher thought processes be reduced to the level of muscular movements. By its mistrust of self observations it rules out one of the best means of analyzing and comparing some of the higher thought processes involved in aesthetic appreciation. Introspection is not to be entirely ignored in the field of aesthetics. It seems, on the other hand, to be the logical source of information in seeking an answer to some of the existing creative phenomena. Behaviorism insists upon the evidence of overt action. This becomes complicated in determining appreciational reaction because social approval stamps as "Cultured" or "Refined" the appreciation of certain forms and even certain pieces of aesthetic expression; for this reason it is most difficult to decide whether an individual's professed enjoyment of a painting is real, rationalized, or frankly an attempt to meet only fashionable social approval. In such a case overt action would indicate nothing.

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5 Munro, op cit., p. 65

Psychoanalysis emphasizes that very introspection which Behaviorism derides. Although this field would seem to be most promising and encouraging as a method of approach in studying the explanation of the visual arts, it has actually been most disappointing in its contributions. The emphasis upon symbolism, unconscious wish fulfillment, Oedipus complexes, etc., has contributed a great deal more to the interpretation of myths, poetic imagery and literary folk lore than it has to the visual arts.

Otto Rank says:[6]

> For even though the various human civilizations may each arise from the combination of a certain environment and a certain type of humanity, all human problems are, in the last resort, problems of the soul. By this we mean, not to say that the soul can be wholly explained in terms of modern psychology as our mechanistic science would claim, but, on the contrary, to stress the autonomy of the spiritual, which not only works creatively in the religious, artistic and social realms, but also determines the idealogy which colours the psychology of the time. Such a borderline investigation of the various domains surround the creative impulse and its manifold forms of expression, it is therefore essential above all else to resist the temptation to accept any definite psychological theory as the principle of exegesis, remembering that the ruling psychological idealogy itself appears to be as much in need of explanation as the other spiritual phenomena which it claims, either wholly or at least satisfactorily to explain. For this satisfactory explanation, even if achieved, is often but a specious product resting on the idealogical coincidence of the exegetic principle itself with the phenomena to be explained. A fallacy of this sort can only be avoided if the various expression forms of a cultural idealogy are regarded primarily as parallel and equivalent phenomena of one and the same dynamic or organic process, which can only be comprehended

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[6] Rank, Otto. Art and Artist. Knopf, New York, 1932. P. 15.

> through the whole process itself and are not explicable through one another.

There has been another theory motivating educational aesthetics, namely, the emphasis upon natural freedom, instigated by Rousseau and carried farther by the emphasis of Schiller's doctrine, which connects art and play. This movement has led to an emphasis upon "free expression" in the "child centered" schools and an effort to stimulate creative originality through the play impulse. Whereas this undoubtedly has merit when dealing with young children, such a philosophy is lacking in definition and direction when dealing with students on a secondary level, who, at this time, are responsive to an intellectual rather than a "playful" approach.

Hughes Mearns[7] says:

> We fight our future writers and artists. Only the strongest willed are able to survive our stronger fight against them.
>
> The creative force must not be permitted to waste itself; it must be directed; slowed up, stopped when necessary, let go to the limit, thinned out, spread wide; but unless the direction comes from the creative artist himself he is nothing more than a machine or an enslaved person.

Another movement closely allied in importance to the educational psychological contributions is the development of art tests and measurements. The study of individual

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7. Mearns, Hughes Creative Power Day, New York, 1932. p. 154

differences and the tests based upon this assumption in fields of general educational interest has found in the realm of art appreciation sympathetic adherents. The greatest difficulty in such methods is lack of authoritative judgment. The psychologist is often incapable of passing judgment as to what others may consider good or bad in matters relating to personal taste. Lacking authority, conformity has often erroneously been taken as a criterion for artistic judgment. The emphasis upon quantitative measurements which such tests entail are inharmonious with judgments relative to aesthetic discrimination. Another fault is that the student is frequently called upon to pass judgment upon a fragment of a work of art, thereby losing the significance and import of the art work as a whole. In general, however, the field of aesthetic tests offers possibilities for fruitful research.

Munro says:[8]

> One of its most promising phases is the attempt to correlate preferences with different age and educational groups, and with different degrees of artistic training. Statistical correlation is the greatest achievement of scientific method dealing with large masses of complex and variable data; and its general principles can be used to guide inductive study even where numerical conclusions are unreliable

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[8] Munro, op. cit., p. 67

One of the most outstanding of these tests is the McAdory Art Test, which was devised to measure art appreciation, either as a group or as an individual test, and to serve as an effective teaching aid by bringing to a focus the reflective judgment as applied to art values".[9]

The test is of a multiple response type requiring an ordered choice from four illustrations according to their relative merit. These illustrations differ from each other in one art element. The test assumes that objective visual material can be judged in order of "artistic merit". It assumes that individual members of any social group can be ranked according to the degree of their agreement with "the consensus adopted".

The variables involve line, dark and light and color. "The McAdory Test is organized to estimate preferences for shapes and line arrangements, values of dark and light, and color - use of hue, value, and chroma".[10] There are no norms established although certain scores, i.e., 161-180 were considered superior; 141-160 were low average and 140 below average. The

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[9] McAdory, Margaret. The Construction and Validation of an Art Test. Columbia University, New York, 1929, P. 3

[10] Ibid, 5.

author says, "When adequate testing has been done and standards of achievement at different levels and grade levels have been established, a field of study will be opened up along psychological lines for the evaluation and selection of types of subject matter suitable for use in teaching children."[11]

Other tests in the field are the Meier-Seashore tests, the Kline-Cary "Measuring Scale for Freehand Drawing", Goodenough's tests for young children and Zane's "Space Arts Perception Test".

The Kline-Cary Test attempts to establish norms of artistic achievement. These norms are based upon group achievements of various age levels. The Goodenough Test attempts to measure intelligence of young children according to their ability to draw the human figure. The test indicated a high correlation with the Stanford-Binet mental age test for ages four to twelve. It was believed by the author that the test also shed light upon the development of conceptual thinking in young children. The Zane Perception Tests are likewise multiple choice tests. Statements relative to paintings are organized under heading of Color, Texture, Scale, Rhythm, Proportion, Balance, etc. The student is required to mark the most desirable statement relative to the painting which involves one special phase, i.e., color. The test aims to increase visual perception relative to the Space Arts. The Meier-Seashore Test gives two choices of paintings, designs, etc., one of which is right.

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[11] Ibid, 31.

Powers and Uhl[12] say:

> All novel emotional responses are, in part, creative. They consist of adaptations of reactions to stimuli from within and without. These stimuli arouse relevant activity, as inner play, reverie, and fantasy. At times and with certain persons, this activity is unsystematic day dreaming; at other times it is systematic and a goal is attained somewhat as in problem solving.
>
> The goal of creative activity is unforseen during much of the antecedent activity, because it must change as the mood changes, while the goal of the problem solver is fixed by the statement of his problem. The problem solver discovers the previous existing law of relationships among the factors of his problem; the creative person evolves and then recognizes the "law", or in this case, the appropriate expression of relationships theretofore non existant among factors,-moods, standards of expression and media of expression- that move onward together. The result is the creative product.

As psychology cannot agree upon the source or direction of emotion, art education must be concerned principally with the intellectual content of the appreciational and creative experience. The background of experience which students will bring to a space arts experience will vary according to individual differences.

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[12] Powers and Uhl. Psychological Principles of Education Century Co., New York, 1933, Pp. 104-5

B. Philosophical Viewpoints Relative to the Space Arts

Psychology classifies two definite reactions to the Space Arts experience; that of an emotional type and that of an intellectual type. By isolating these factors, each type of reaction can be more minutely studied. The philosophical approach to art experiencing is also concerned with two general classifications, the "productive" expression and the "appreciative" expression. Philosophical thought seems well agreed upon some kind of general classifications of kinds of experiencing. Curt Ducasse believes that these kinds of experiencing are closely allied but differ in their expression.

Ducasse marks this difference and says: "The aesthetic experience in contemplation and the art creative act are phenomena of the realm of feeling just as distant from each other as reading and writing, which are the exact analogues in the realm of reasoning."[1]

Yet Ducasse classes both appreciation (which he classifies as aesthetic contemplation) and creation under the title of Endotelic art, their similarity lying in the fact that in both cases the end is feeling. One operates

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[1] Ducasse, Curt. Philosophy of Art
Dial Press, New York, 1929. P. 97

through the channel of contemplation; the other through the more practical or material channel of metamorphosis. That is, the artist changes the form of the clay or the surface of the canvas to attain an "effective" and desired goal of feeling. The result of such an act is practical in that it produces an effect upon concrete material.

Ducasse defines "Endotelic" art as the "objectification of the artist's self, i.e., of his feelings, meanings or volitions. The art which is endotelic may then be said to consist in conscious or critically controlled objectification of self; or, equivalently in consciously objective self expression".[2]

Appreciation, on the other hand, or as Ducasse calls "aesthetic contemplation", is of a slightly different character.

Schopenhauer's description of aesthetic contemplation is, according to Ducasse,[3] as follows:

> If a man relinquishes the common way of looking at things, which is always ultimately concerned with their relations to desires and purposes; if he thus ceases to consider the where, the when, the why, and the whither of things, and looks simply and solely at the what; if, further, he does not allow himself to think of them conceptually (e.g., as things to be recognized, distinguished, classified, etc.) but instead of all this, gives the whole power of his mind to perception,

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2 Ibid, 111

3 Ibid, 137
Schopenhauer, Arthur. The World as Will and Idea Kegan Paul, French Trubner & Co., Ltd., 1909. P. 231

> sinks himself entirely in this, and so yields himself to the quiet contemplation of the object present that he loses himself in this object,- then his state is that of aesthetic contemplation, and the object of it is the aesthetic object.

Describing the opposite role of the artist in producing an art work, John Dewey says:[4]

> Any idea that ignores the necessary role of intelligence in production of works of art is based upon identification of thinking with use of one special kind of material, verbal signs and words. To think effectively in terms of relations of qualities is as severe a demand upon thought as to think in terms of symbols, verbal and mathematical: Indeed, since words are easily manipulated in mechanical ways, the production of a work of genuine art probably demands more intelligence than does most of the so-called thinking that goes on among those who pride themselves on being "intellectuals".

From the descriptions of these two phases of the art experience, Schopenhauer's description of "aesthetic" contemplation" and Dewey's description of the art productive experience, there is a similarity underlying both. Schopenhauer would relinquish "the common way of looking at things", abolishing purposes and emphasizing not"the where, the when, the why and whither of things", but perceive the "what". Dewey believes that the productive artist must think "in terms of relationship of qualities" which is not identical with thinking "in terms of symbols, verbal and mathematical". Both, then, acknowledge unique

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[4] Dewey, op. cit., p.46

qualities of the art experience; the artist, productively minded, creates; the observer, contemplatively minded, receives what is produced. The "what" of Schopenhauer's contemplative experience bears a strong similarity to Dewey's "relationship of qualities" involved in art producing.

The close relationship existing between the productive and appreciative phases of the art experience are likewise stressed by John Dewey.[5]

Dewey says:

> Art denotes a process of doing or making. This is as true of fine as of technological art. Art involves molding of clay, chipping of marble, casting of bronze, laying on of pigments, construction of buildings, singing of songs, playing of instruments, enacting roles on the stage, going through rhythmic movements in the dance. Every art does something with some physical material, the body or something outside the body, with or without the use of intervening tools, and with a view to production of something visible, audible, or tangible. So marked is the active or "doing" phase of art, that the dictionaries usually define it in terms of skilled action, ability in execution. The Oxford Dictionary illustrates by a quotation from John Stuart Mill: "Art is an endeavor after perfection in execution" while Mathew Arnold calls it "pure and flawless workmanship".
>
> The word "esthetic" refers, as we have already noted, to experience as appreciative, perceiving and enjoying. It denotes the consumer's rather than the producer's standpoint. It is Gusto,

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[5] Ibid, p. 47.

> taste, and, as with cooking, overt skillful action is on the side of the cook who prepares, while taste is on the side of the consumer, as in gardening there is a distinction between the gardener who plants and tills and the householder who enjoys the finished product.
>
> These very illustrations, however, as well as the relation that exists in having an experience between doing and undergoing, indicate that the distinction between esthetic and artistic cannot be pressed so far as to become a separation. Perfection in execution cannot be measured or defined in terms of execution; it implies those who perceive and enjoy the product that is executed. The cook prepares food for the consumer and the measure of the value of what is prepared is found in consumption. Mere perfection in execution, judged in its own terms in isolation, can probably be attained better by a machine than by human art. By itself, it is at most technique, and there are great artists who are not in the first ranks as technicians (Witness Cezanne), just as there are great performers on the piano who are not great esthetically, and as Sargent is not a great painter.

In drawing conclusions from the above viewpoints it would seem advisable that both artist and aesthetic "consumer" be able to meet on some common grounds of understanding. It is believed by the writer that it is part of the function of art education to provide opportunities for this common understanding and experiencing. This study will assume as a basis for developing an art curriculum that there are in the realm of the space arts certain fundamentals which are necessary for either aesthetic or creative understanding.

> Art should be studied in the same way as we study other subjects. We do not begin our study of the sciences with a history of science, with the lives of famous scientists or with a lot of theories as to the nature of science. In studying chemistry for example, we begin with the science itself, studying and familiarizing ourselves first with its elements, then with the combination they make, working from simple to complex, and, along with them, the principles governing their combination. So with the languages. Our study of them begins with learning their vocabulary and grammar. We learn to enjoy French by reading French, by speaking French, by thinking in terms of French. So with literature. We learn to appreciate Shakespeare by reading Shakespeare, not by reading about him.[6]

The viewpoint which believes art to be a necessary form of human experience is widespread in its influence. We find this viewpoint expressed not only by John Dewey in this country, but also by Moholy-Nagy, an instructor in the Bauhaus at Weimar and Dessau, Germany, and himself a painter.

Moholy-Nagy[7] says:

> A human being is really developed only by what crystallizes out of the sum total of his own experiences. Our present system of education contradicts this axiom by stressing preponderantly a single field of application.
>
> Instead of extending our milieu

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[6] Opdyke, George H. Art and Nature Appreciation The Macmillan Co., New York, 1932. Pp.2-3

[7] Moholy-Nagy, The New Vision. Brewer, Warren & Putnam Inc., New York. Pp. 10-11

as the primitive man was forced to do, combining as he did in one person hunter, craftsman, builder, physician, etc. we concernoourselves only with one definite occupation - leaving unused all our other faculties.

Tradition and the voice of authority intimidate modern man. He no longer dares to venture into certain fields of experience.

He becomes a man of one calling; he no longer has first-hand experience elsewhere. In constant struggle with his instincts, he is overpowered by outside knowledge. His self-assurance is lost. He no longer dares to be his own physician, not even his own eye. The specialists - like members of a powerful secret society - obscure the road to all-sided individual experiences, the possibility for which exists in his normal functions, and the need for which arises from the center of his being.

Often even the choice of a calling is determined by outside factors: a man becomes a confectioner or a cabinet-maker because there is a shortage of apprentices in those trades; he becomes a lawyer or a manufacturer because he can take over his father's business.

The accent lies on the sharpest possible definition of the single calling, on the building up of specialized faculties; the "market demand" is the guide.

Thus a man becomes a locksmith or a lawyer or an architect of the like (working inside a closed sector of his faculties) and it is at best a happy exception if after he has finished his studies he strives to widen the field of his calling, if he aspires to expand his special sector into the complete circle.

At this point our whole system of education has hitherto been found wanting- notwithstanding all our vocational guidance and psychological testing. Everything functions - and functions alone - on the basis of the present system of production, which recognizes only exterior motives of material gain.

A "calling" means today something

> quite different from following one's own bent, quite different from solidarity with the aims and requirements of a community. The personal life goes along outside the "calling", which is often a matter of compulsion and is regarded with aversion.
>
> Our specialized training cannot be abandoned as yet at this time when all production is being put on a scientific basis, but it should not be carried so far that the individual becomes stunted - in spite of all his highly prized professional knowledge. A specialized education becomes meaningful only if a man is developed along the lines of his biological functions, instead of on those of an outmoded educational aim. Without this organic security the richest differentiations of specialized study - the "privilege" of the adult - are mere quantitative acquisitions, bringing no intensification of life, no widening of its scope. Only a man equipped with the clarity of feeling and the sobriety of knowledge will be able to fit into the requirements that are so complicated in appearance - even those of a specialized calling - and to master the whole of life. Working from this basis alone can we find a plan of life that places the individual rightly within his community.

This desire to make the art experience universal is an underlying philosophy of contemporary art educators. The belief that the art experience is not esoteric but universal in its scope finds many other sympathetic adherents.

Helen Gardner says:[8]

> We are all potential artists - almost all of us. There are but few who seem entirely wanting in capacity for understanding or creating; many have considerable ability; a few become great artists. It is a matter of degree. Art and the way of art exists for most of us - not only exist but permeate all life, today as well as yesterday.
>
> A current opinion, far too common, holds that art is a luxury, a monopoly of wealth, a matter of museums, something to be indulged in only in one's leisure, and quite inessential to and divorced from one's daily activities. How far from the truth!

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8 Gardner, Helen. Understanding the Arts Harcourt Brace & Co., New York, 1932. P. 318.

Summary of Viewpoints Relative to the Space Arts.

The foregoing discussion indicates the trends of contemporary thought, both psychological and philosophical in character, relative to the Space Arts. The writer believed it necessary before beginning the study proper to make a careful survey of general cultural viewpoints relative to attitudes toward the Space Arts in general. The attempt was to study various phases of thought which might influence the making of an art curriculum. The viewpoints discussed cover a wide field including philosophy, psychology, education, art criticism and sociology. The rather general headings of Psychological and Philosophical viewpoints were chosen because they seemed descriptive of the differentiation between scientific and non-scientific thinking in this field.

In summarizing the contributions of psychological thought which bears upon the problem there are several outstanding trends which should influence the teaching techniques and procedures for the visual arts.

These trends are in resume as follows: (1) Psychology in studying human responses to works of art has differentiated between two types of responses. These responses are (a) emotional and (b) intellectual. There is little general agreement among various psychological schools as to the nature or direction of these emotional responses. The intellectual response has been compared to the "problem solving" involved in the learning process (2) Whereas these conclusions are still

decidedly hypothetical in character, they have strengthened the belief that the arts may be understood on some more scientific basis than the vague and idealistic aesthetics of the past. (3) The appearance of scientific tests in the art judgment field strengthen the belief that there are certain objective goals toward which an art curriculum should direct learning material and direct the development of new visual concepts.

In summarizing the philosophical trends of contemporary thought there are certain outstanding trends (1) There are two phases of art expression, (a) that which is productive, (b) and that which is appreciative or contemplative. (2) Dewey believes that they are closely allied. Ducasse would designate the difference as follows: both types are the "objectification of the artist's self, i.e., of his feelings." Dewey believes that productive experiencing is realized in some concrete material; aesthetic or contenplative experiencing may be apparent only to the individual and is not perceptually objective. (3) The art experience travels from aesthetic "procedure" to aesthetic "consumer". There is a decided desirability that there be a common meeting ground of experiencing. (4) The visual art experience is not esoteric but should be a common experience for all. (5) The visual arts should be studied by their own particular system just as other subjects of the school curriculum demand their particular techniques of teaching.

V. Constant Factors of the Art Experience

From the preceding survey of the various new viewpoints regarding the art experience the writer has attempted to point out the multiple approaches that have been made; all of which aim at a better understanding of the Space Art experience. The solution of these problems involves efforts in the fields of psychology, philosophy and scientific testing. All of these are of great significance and will be far reaching in their implications regarding Space Arts teaching procedures. In the meantime the Space Arts continue to be taught and are often taught with no definite objectives. It is the belief of the writer that there is sufficient agreement among the authorities available to determine the specific intellectual objectives of the Space Arts experience.

Opdyke[1] specifically names as the essentials of the visual experience, "light, dark, color, line and form (shape)". He says:

> Art is a language - a means of expression - and as foreign as Greek to the average laymen. And the way to learn to read art is to study it, not through interpreters, but in the original tongue, so to speak; to study it directly rather than indirectly. Art has its "vocabulary" in the esthetic elements - light, dark, color, line and form (shape) and its "grammar" or "rhetoric" in the principles governing their combination -

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[1] Opdyke, op., cit., 3.

called the principles of composition, or design. Only by studying, observing, and familiarizing oneself with art's vocabulary and grammar can one ever learn to read it, to think in terms of it, to appreciate and enjoy it.

Thomas Munro[2], in discussing the appreciative experience also includes these elements of the visual arts. He says:

> Again, many pictures are extremely complex in plan of organization, and a hasty glance, with attention wandering elsewhere, is not enough to show the inter-relation of parts. As a symphony is built together of melodies, chord-progressions, modulations in key and other factors, so a picture can be built of certain repeated lines, colors, solid objects, light and dark areas, each part drawn with care as a part of some unified design. To follow these many parts in detail, to see how a certain theme - some distinctive, curving line, some particular color - is repeated here and there, varied a little to avoid monotony, contrasted suddenly with a radically different theme, bound up with it in some consistent way, and the whole picture thus made into a new, consistent world of its own - this is one of the greatest enjoyments that the world of art can afford. There is no way of proving to the uninitiated that it is worth doing at all. In general terms, it sounds unattractive, and even to read a particular-analysis, and look here for this line, there for that spot of color, is not very exciting in itself. Words are the only way, however, in which an author not present to point with his hand can call the reader's attention to specific details. For the

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[2] Munro, Thomas. "Introduction". Great Pictures of Europe. Tudor Publishing Co., New York, 1934. P. XX

> ultimate justification, he can only point to the testimony of countless artists and lovers of art in every age, who have found such playing with visual forms to be one of the most exciting and fascinating activities that life affords.

In his recent book on "The Art of Renoir" A. C. Barnes says: "Composition, in other words, is an uninterrupted progressive sequence of rhythmic contrasts in color, line, light, space, mass and pattern".[3]

Allen Tucker in "Design and the Idea" lists in the table of contents as the "Essentials of Design", "Form", "Mass", "Line", "Color", "Light", "Space".

The "Constant Factors of the Art Experience" selected for this study are Line, Shape, Dark and Light, Form and Color. This section represents, of course, only the writer's best efforts in analyzing available viewpoints from writers in this field and from the writer's own eight years of experience in teaching. This section, then, is concerned with a synthetic interpretation of authority and aims to carry out the final step of the study, the "Writer's Synthesis of Trends to form the basis of a space arts curriculum."

The final part of this study will attempt to organize these intellectual and concrete objectives of the space arts. We shall attempt to show the relationship existing between these concrete objectives and the varied expressions of the visual arts, such as painting, sculpture, decoration, etc.

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[3] Barnes, A. C. and DeMazia, Violette. The Art of Renoir. Minton, Balch & Co., New York, 1935. P. 28.

From this analysis and synthetic placing of the analytical evidence it is hoped that teachers of the Space Arts may find a nucleus about which to organize a curriculum.

These constants will now be presented as the writer has understood them from the authorities mentioned. After a study of these viewpoints it is believed necessary to take a position as to the identity of the constant elements of visual art experiencing and elaborate upon these elements as they might be used in teaching. It is believed that there is need for the particular kind of visual perception as described in the following units under the headings of Line, Shape, Light and Dark, Form and Color.

A. Line

In broadening the students' concepts of line there are certain potentialities of line to be realized. It is desirable that these potentialities as they exist in various art expressions be pointed out and discussed.

Actually, there is no such thing in nature as a line. Physically everything has volume or weight. The illusion of line is created by the impact of mass against mass, a tree silhouetted against the sky, the horizon line of the ocean. Line marks the end of one thing and the beginning of another. As such, in art expression, it may be either a kind of brief method of notation for defining bulk or mass, or it may be self-expressive.

Young children will often express visual ideas by means of an outline.[4] Disregarding actual form a child symbolizes by line the thing to be expressed, selecting those things in the object which to him are the significant parts. In drawing a man a young child often depicts the head by a circular or oval line, plus the eyes, nose and mouth. The arms and legs are depicted by lines as is also the torso which only serves to link the arms and legs to the head. Such a method

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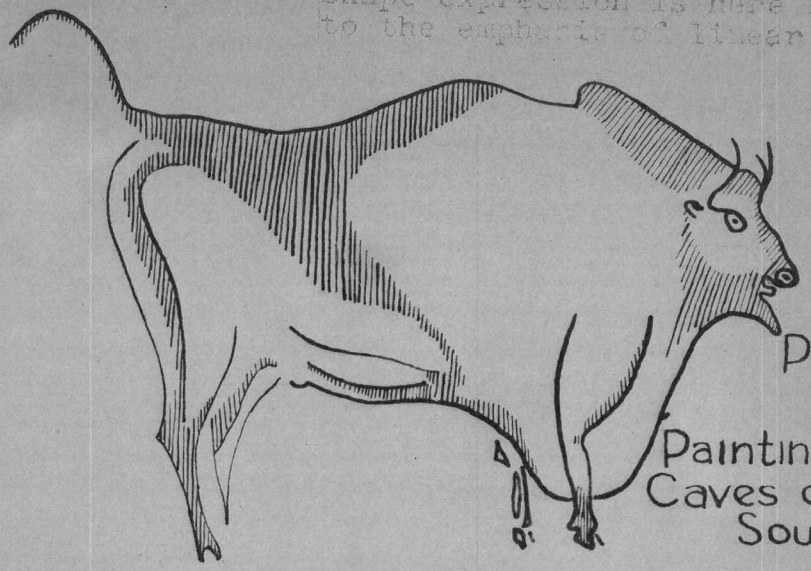
[4] Fry, Roger. Vision and Design. Coward McCann Inc. New York. Pg. 85.

Graphic expressions showing strong emphasis upon rhythmic line movement. Shape expression is here subordinated to the emphasis of linear expression.



Prehistoric Animal Painting from Caves of Southern France

Javanese Batik Pattern

which is really a mental notation rather than visual representation is symbolistic in type. In other words, the man thus depicted is a kind of hieroglyphic (picture writing) notation of man which to the creator has significant meanings.

Line may be a kind of visual notation and as such is used by architects, engineers, and others for diagrams, maps. etc. As such it is far more expressive than words to describe certain fixed situations. In such a case the use of line is entirely symbolic; that is, it stands for something which is not present, but which is supposed to suggest to the observer a certain hypothetical situation. The use of line as an expressive symbol is probably almost as old as man himself. In pre-historic caves in southern France and Spain there have been found outline drawings on the walls and ceilings. From these same caves of Altamira there also were taken the tusks of mammoths upon which were outlines depicting animals and men of that particular period. Anthropologists estimate that these drawings are from ten to twenty-five thousand years old, and are the work of Cro-Magnon man.[5]

Man early expressed visual experiences by means of line; he expressed the break of the cliff against the sky by means of a jagged line. Thus, man early interpreted from

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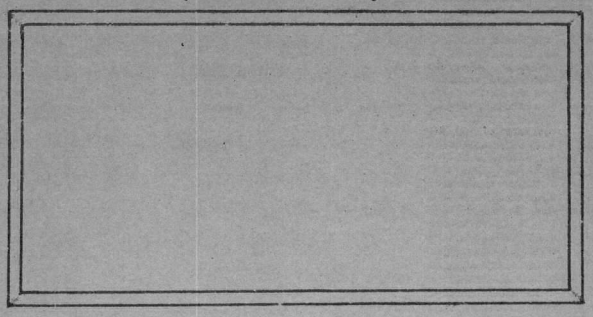
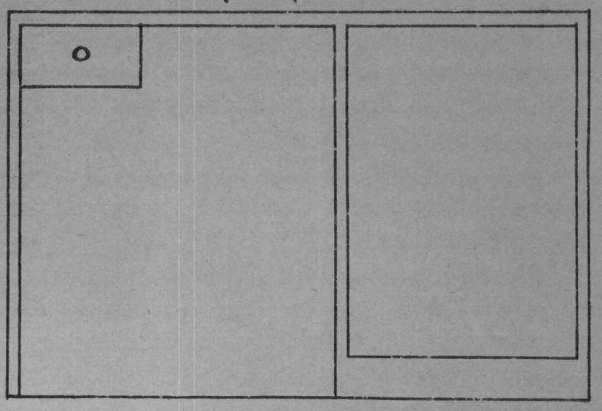
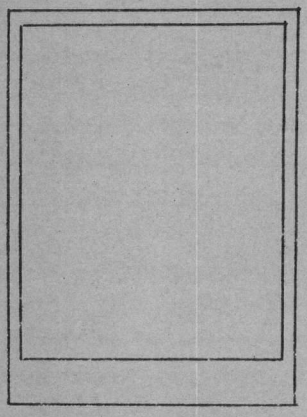
[5] Butler, H. R. Painter and Space. Charles Scribner's Sons. New York, 1923. Pg. 8-21.

Line drawings indicating 3 types of linear expressions, often serving utilitarian purposes.

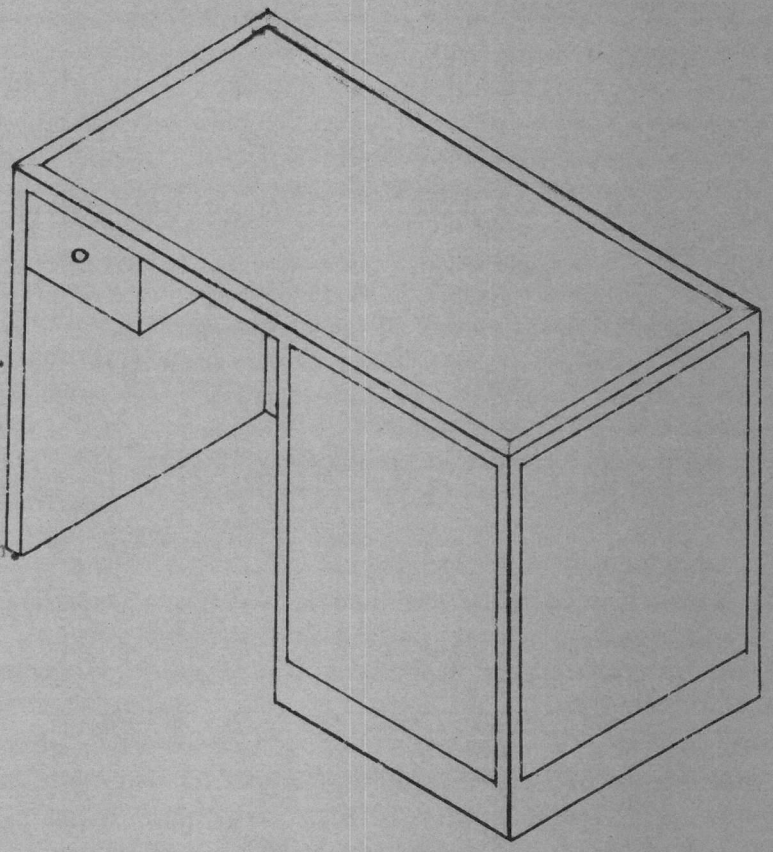


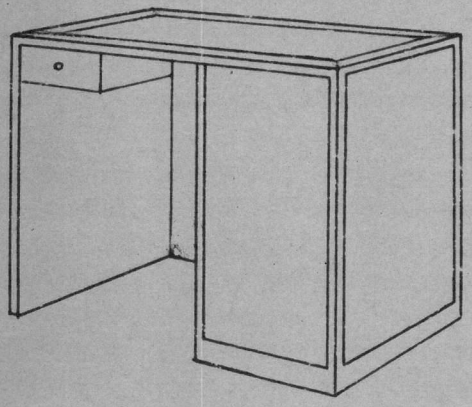




PLAN and ELEVATION drawings of desks giving top and end views as well as the front elevation. The various views of the object are drawn separately and according to actual or a scale of measurements. Such drawings are used to show the actual construction and furnish the builder or carpenter a diagrammatic guide.

A view of this type goes farther than the plan and elevation drawings in that it shows plan, elevation and end views in combination or as a whole. This is called an ISOMETRIC drawing and altho it indicates the depth or third dimension of the object it violates the rules of natural vision, hence appearing distorted. Measurements are actual as in plan and elevation, giving an accurate guide for construction and yet more closely approximating the actual appearance of the object than elevation and plan.





LINEAR PERSPECTIVE drawing of an object as a pictorial artist would draw it, observing the rules that parallel lines diminish to the same vanishing points on eye level. Such a drawing depicts an object as it appears to the human eye not as it actually is.

nature what did not actually exist. That is, he expressed nature visually by his own man-made expression--a line. In a similiar manner man expressed fundamental truth by numbers. Music, in a like manner is man's auditory expression. Language is his oral expression.

In Vision and Design, Roger Fry introduces the entertaining idea that Paleolythic man was able to visually represent such beautiful linear animal drawings because not being influenced by so many mental associations as more highly cultured man, he could faithfully and photographically record exactly what the eye registered.[6]

Line Expressions:

In our every day contact with our environment we experience the quality of lines in themselves as well as identify them with the impact of volume against volume. Thus we see lines as straight or curved. We see their direction as horizontal, vertical, and diagonal We often associate with the direction of line such feelings as calmness, suggested by the horizontal expanse of sea; the feeling of aspiration, which the vertical spires of a church steeple may inspire; the force which the diagonal slope of a mountain suggests. That is, we see line in relationship to our environment and attach those

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[6] Fry, Roger. op. cit. Pg. 93.

relationships to line itself.

A line is always moving in some direction; as such it is the track of motion--the material evidence showing the result of rhythmic movement. The pathway of a line movement may be circular, vertical, diagonal, horizontal, or a combination of these four. The character of a line must then be determined as to its purpose or function. When this purpose is indefinite, undecided, contradictory, a line loses its forcefulness as a conveyor of rhythmic, related movement.

Perhaps the most characteristic line of to-day is the horizontal. We find the horizontal line expressed by our bridges, streets, and even our sky scrapers are built up of a series of horizontal plans (observe a building in construction). This popularity of the horizontal is not merely a coincidence but has grown out of the need of modern man for repose and stability in an age which is so dynamic and so productive of new mechanisms to which the human organism must constantly adjust itself.[7]

This emphasis on horizontalism is particularly evident in the decoration of modern interiors where the purpose has been to extablish by means of horizontalism an atmosphere of repose and calm in the midst of a turbulent exterior. Observe

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[7] Frankl, Paul. Form and Re-Form. Harper & Brothers. New York. 1930. Pgs. 51-59.

also the dominating horizontal lines of contemporary furniture designs. This Horizontalism not only establishes a feeling of repose but will, when properly used, actually give a feeling of more space and so visually enlarges an otherwise cramped room. It is interesting to compare with this modern concept the use of line as expressed by the Gothic period of architecture (10th. to 15th. centuries.) The builders of the Gothic cathedrals by means of line emphasis, succeeded in achieving an atmosphere of spiritual elevation from the real world to a loftier and better religious world. The predominant line direction was vertical and the Gothic arch, with its two curves meeting in a point directed upwards became to many a symbol of aspiration.

Thus, though we may deny the actual existence of a line we are accustomed to speak of the position of materials as the line direction. As individuals we are very susceptible to the movement and associations which lines stimulate.

Besides the straight line with its varying directions of horizontal, vertical, and diagonal, the curved line offers also a range of variations. There is, of course, the curve drawn with the use of a mechanical tool, the compass, and which is a portion of a circle; other than this very mechanical curve there is the "C" curve which differs from the compass curve by drawing larger either the top of the curve or the lower curve; thus subordinating one portion. Then, there is the "S" curve which is a double, inverted, and connected curve,

which may likewise show emphasis on either the top lobe or the lower lobe. The "U" curve is the combination of two verticals showing a smooth transition into a flattened "C" curve. This is of course merely a shorthand language for designating or speaking of curved lines. Actually in a pleasing line composition there are many variations of these types which become an integral part of the whole composition. A smooth linear rhythm shows an easy transition or carrying over from one opposite line direction to another.

The use of line as an expressive visual language has long been emphasized, particularly by the Chinese and Japanese. The style of writing employed by the Chinese emphasizes line quality. Chinese writing is not merely the result of finger movement as is occidental writing, but the whole arm movement is involved. The writing is done by grasping the brush in the fist and holding it in a position vertical to the paper. Calligraphy (or beautiful penmanship) is considered a fine art in China.

Chinese painting portrays a skilled handling of line. Structure and movement are expressed by sure and beautifully expressed lines. These paintings usually done on a silk roll show a skilled handling of the brush. By a minimum of linear expressions, and practically no light and dark shading and little color, the Chinese are masters in depicting the most subtle facial expressions and rhythmic movements.[8]

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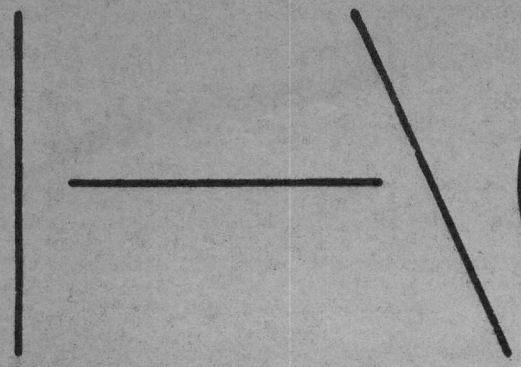
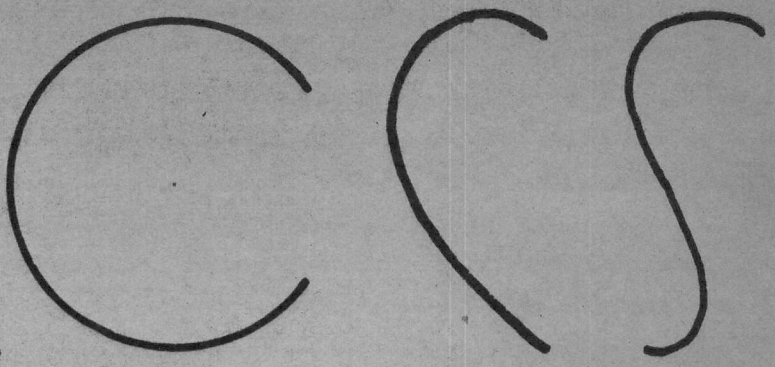
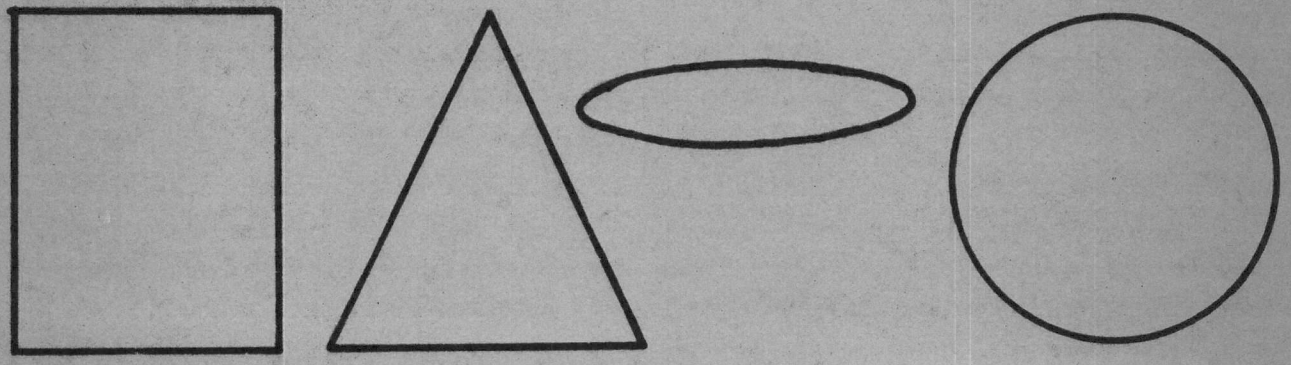
[8] Gardner, Helen. Art Through the Ages. Harcourt Brace. New York. 1926. Pgs. 436-437.

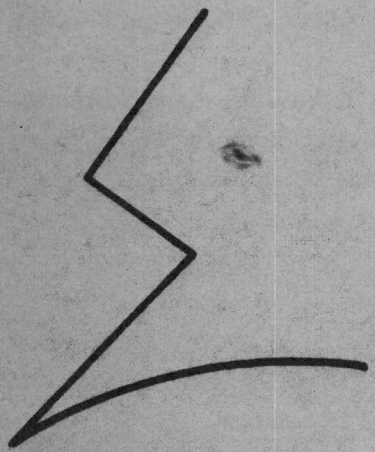


Vertical, Horizontal, and Diagonal Line Directions showing development below into rectangular and triangular shapes.

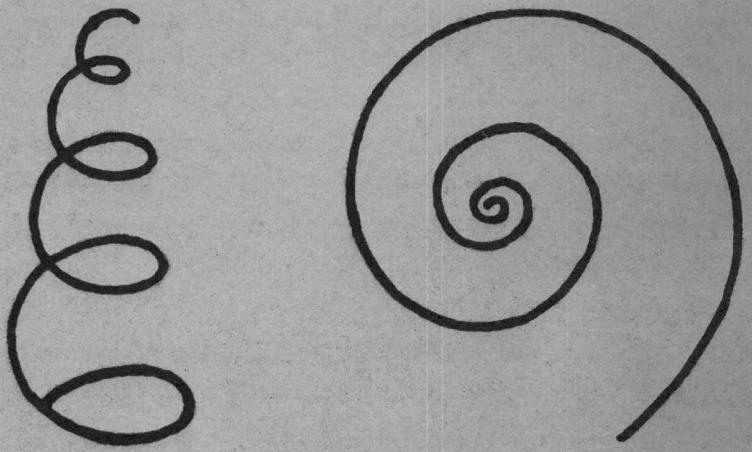


Curve types, mechanical circle radius, C and S curves--lower drawings show use of C curve and radius of circle to develop elliptical and circular shapes.





Combination of straight-diagonal, and curved-diagonal to suggest diagonal movement.



Continuous C curves developing into vertical spring-type of linear movement and growing spiral-type.

B. Shape

From a broadened concept of the potentialities of line as a medium of expression the student may progress to a wider viewpoint of the possibilities of shape expression.

Although line is often deliberately chosen as the dominant visual expression because of its particular suitability, as is the case in Chinese painting, line may also serve a subsidiary function as contributing to another visual expression - that of Shape. Suppose we take two vertical lines of equal length and parallel to each other; we then connect them by the shortest line possible (a straight line); we are no longer conscious of the existence of two separate movements, but such movement has been co-ordinated into one shape, which may be recognized as a square or rectangle. The visual expression has changed from a linear expression to an expression of contour of shape. That is, the line by continuously leading our eye from corner to corner has created a new entity or contour. This contour describing a new entity has length and width. It is now a complete thing in itself. Thus, a line following perfect circular movement describes a circle. The three shapes, the square, circle and triangle, are simple fixations of complete entities in the realm of visual expression.

The placing of any of these shapes upon a plane, such as a piece of paper, immediately suggests the breaking of the

background into other partially defined shapes. When the enclosed space is darkened, this inter-thrust of light and dark of background and shape, is often referred to in art terms as Notan.[9] When a line completely encloses a space, such a space becomes completely active; thus circles or squares which are complete expressions of circular and rectalinear (horizontal and vertical) movement speak as complete entities and in a simple linear pattern (without other light and dark or color influences) will focus the eye to some central point of attention.

Linear movements which only partially enclose space create from the background plane other partially active spaces. That is, in as much as such spaces are only partly defined they are less forceful (again disregarding light and dark and color emphasis) than those which are entirely enclosed by lines. Partially active spaces, thus <u>suggest</u>, rather than <u>tell</u> the <u>complete</u> story.

<u>Shape Expressions</u>:

The use of shape or mass contours is very old in the visual language. In the decorations of Egypt, early Greek and Cretan civilization we find the use of shape to create pattern or architectural surfaces already a highly developed

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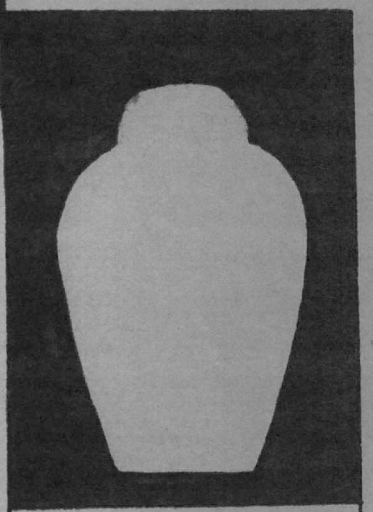
[9] Notan: A word of Japanese origin referring to arrangement of dark and light.

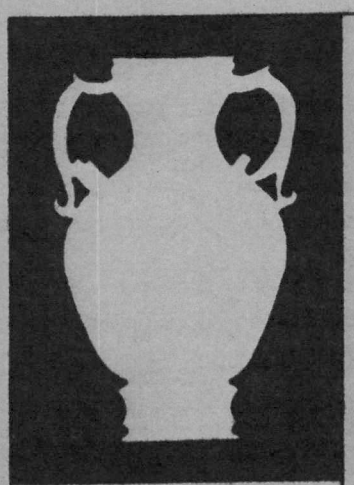
EGYPTIAN

GRECIAN

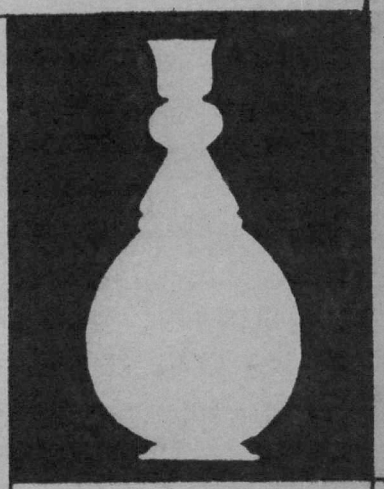


CHINESE

VASE SHAPES SHOWING A VARIETY OF CONTOURS AS DIFFERING CULTURES HAVE EXPRESSED THEM. MUCH OF OUR KNOWLEDGE OF THE LIVES OF PAST CIVILIZATIONS HAS BEEN BASED UPON THESE USEFUL ARTICLES WHICH REMAIN. DIFFERING CLIMATES AND CUSTOMS IMPOSE DIFFERENT NEEDS. SHAPE EXPRESSIONS REFLECT THESE INFLUENCES.



MORESQUE



PERSIAN

art. The historical function of shape in the visual arts seems not to have been so descriptive as is often the case of line, but more decorative in type. By decorative we mean the ability to increase the visual appeal of a surface by an interweaving or pattern of shapes, dark and light , and colors. Man has long felt the urge to decorate plain surfaces.

The Egyptians painted upon the ceilings of their tombs patterns of shapes. Pattern is the result of organizing shapes and colors according to some pre-conceived plan. The Greeks planned the shape contour of their pottery and likewise decorated them with shape patterns. Our own American aborigines have created a massive style of shape decoration with which they decorated their pottery, blankets and jewelry.

Decoration:

Very often this surface decoration is of a type called an all-over pattern. An all-over pattern is the repetition of a unit or units which by "recurring relationships"[10] carry the visual attention over a surface. The use of decorated surfaces fulfills mans demand for variety. Particularly is this desire expressed in our clothing and every year a new assemblage of gay printed textiles heralds the approach of spring. Our contemporary textile industries are not alone in their

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[10] Dewey, op. cit. Pg. 166.

manufacture of printed textiles. The natives of the south seas manufacture from the bark of the bread-fruit tree, a kind of material upon which they draw a decorative all-over pattern, using natural dyes. This material is called "Tappa" cloth. Across the sea in Java there is another type of native textile decoration called "Batik." This is done by painting with hot wax upon the cloth and then dipping in dyes. The pattern may have to be waxed and re-dipped many times before the pattern is completed in as many colors.

Use of Decoration:

The use of decorated surfaces is not confined alone to dress or costume decoration, but it is also a vital part of our home atmosphere. Decorative pattern in home decoration finds expression in rug, wall paper, drapery, and upholstery fabrics. Such pattern is often a welcome break from the monotony of plain surfaces and furnish satisfaction to man's demand for variety and visual interest. The contrast of pattern against a plain surface may also serve to enhance the beauty of the plain surface.

In determining the pattern of the decorative surfaces it is most essential that we consider use and individual need. According to Frank Lloyd Wright, "specific purpose is the qualifying aim of all creation."[11] Each individual should

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[11] Wright, Frank Lloyd. Modern Architecture. Princeton University Press. 1931. Fly Leaf.

determine his own visual needs and select for the fulfillment of those needs in home decoration. Too often it is felt that such considerations should be left to others or to precedent and tradition when an analysis of immediate needs and personal preferences would be far more satisfying. A great deal of our historical knowledge of the lives of past generations is based upon the types and styles of their intimate belongings. By these things we are able to reconstruct the lives that were lived at that time. It is hardly conceivable that our modern life has not imposed new demands with its electricity, radio, and mechanical improvements. The things by which we live should be judged by the physical, social, and visual satisfaction which they supply to our contemporary life.

The unprecedented productivity of our industrial age makes the selection of furnishings increasingly complex. The consumer has greater need than at any previous time of discrimination and consideration in selection. First of all, the consumer must consider his own personal needs; surely not a white rug in a living room where there is a great deal of wear, nor cold lavender walls in a dark gabled bedroom already lacking warmth and light. We must choose with an eye to our immediate, personal needs and then see that the elements of pattern, line, and shape add to the visual charm and beauty of that need. Pattern should add to the visual appeal of the room or it has no place. It is often necessary that we combine patterns or subordinate one pattern to another. For instance

we might build the decorative note around a particularly beautiful oriental rug, subordinating the drapery pattern, but letting it repeat the dominant coloring of the rug design. In other words we are creating a pattern of shapes in our homes when we arrange furniture against background, drapery against wallpaper, and upholstery pattern against rug pattern. Because our civilization is essentially cosmopolitan we have access to all types of patterns created by all types of people. Our diversified department stores display a Sarouk rug from Persia alongside a rug from China or beside one designed after the hooked rug patterns of our Colonial fore-fathers. Such situations call for a fine understanding and discrimination as to pattern, selection, and pattern combination.

Differing Types of Decoration:

As decoration essentially implies the ornamentation of some material object or surface, and as different modes of living imply differing objects and tools to live by, we have as many types of decoration as we have and have had different types people. In the first part of this chapter we stated that individuals re-shape the materials of their immediate environment to conform to their own needs and expressions. This is just what has happened in the case of decorative pattern. Past civilizations have used parts of their environment to decorate their own utensils, fabrics, and homes. The Egyptians having in their environment certain plants such as the Lotus flower

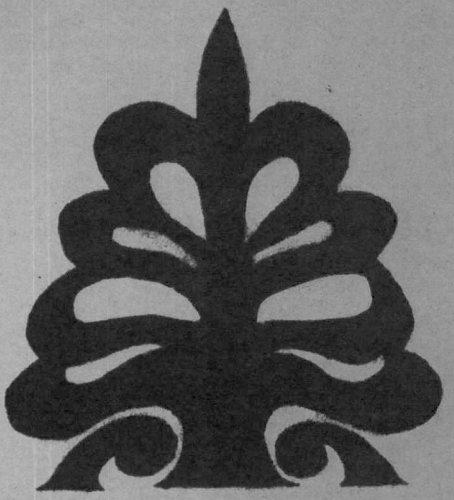
of the Nile and the Papyrus plant used these natural forms in a stylized manner. By a "stylized" manner is meant the particular or characteristic manner of expression peculiar to a particular group of people. The Greeks, having different plants and differing interests, chose another style of decoration. The Moors in Spain,with an absorbing interest in mathematics and mathematical formulas,consequently,expressed this interest when they decorated with interlacing geometric patterns the floors and walls of their buildings as well as their textiles and pottery. The Japanese in their wood block prints show an interest in surface decoration and decorative pattern. Japanese prints,which reached a high degree of excellency during the 17th, 18th, and 19th centuries,emphasize the inter-weaving patterns of shapes, lines, and light and dark. For this reason, they have much in common with flat decorative pattern. Because of their soft coloring and decorative quality, they make admirable wall decorations for many different types of rooms. The modern movement has found in Japanese prints a flat two dimensional (heighth and width) quality which has much in common with the simplicity of the modern twentieth century style of furniture and interior decoration.

Showing the manner in which the Egyptians conventionalized (formalized) a natural form from their environment.

EGYPTIAN LOTUS FLOWER

Adaptations of this particular design were used architecturally as capitals of columns as well as to decorate flat surfaces. The Lotus was believed to be symbolical of the life giving qualities of the Nile. It is often combined with a zig zag line design called the "Nile Pattern".

HISTORIC DESIGNS SHOWING HOW ENVIRONMENTAL OBJECTS AND PARTICULAR INTERESTS HAVE BEEN UTILIZED IN CREATING PATTERN.



GREEK ANTHEMION

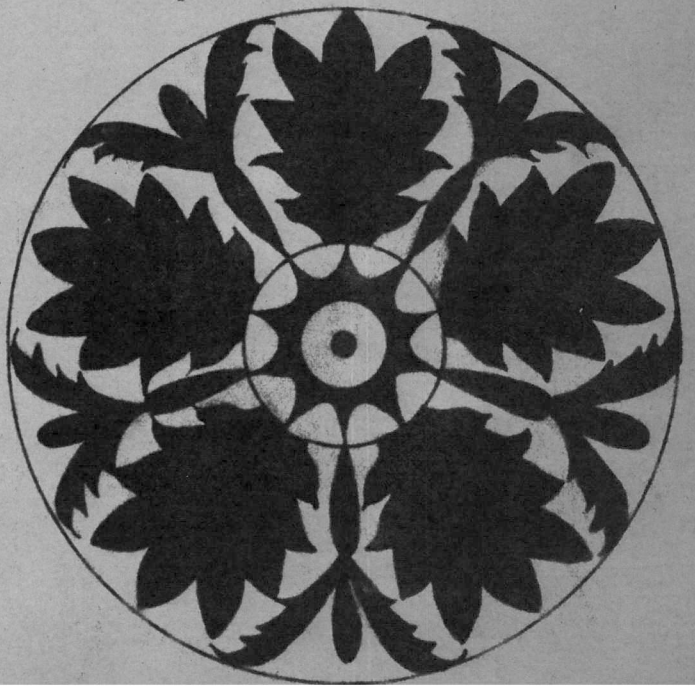
The source of this design is said to be the honeysuckle. It shows a distinctly "stylized" treatment of a naturalistic form.

MOORISH INTERLACING BAND PATTERN

Interlacing border design; a type used by many civilizations. The Moorish style of border is built on a very mathematical system. The straight bands meet at angles of either 90 degrees or 135 degrees.

ROMAN ROSETTE

Probably the original source of inspiration for the Rosette pattern was the rose. Circular decorations radiating from a center point are often identified under this classification.



C. Light and Dark

Besides the importance of Line and Shape in creating pattern, we must also consider the possibilities of light and dark, or Value, as this quality is often termed. Pattern is greatly dependent for its interest upon this quality. Mention of this dark and light interest was previously referred to in speaking of the interweaving of black and white shapes; as soon, then, as we combine shapes differing in elements of light and dark, we are dealing with Value differences. Usually, however, when we speak of Value we mean all the varying steps of grayness which lie between the two most opposite extremes, which are black and white. When all the transition steps from black to white are supplied the result is a smooth and continuous dark and light rhythm leading from one opposite to another.

Visually we follow light and dark contrasts just as readily as we follow line rhythms and shape contrasts. A strong contrast, such as black against white, will focus attention as readily as does a sharp color contrast. Where emphasis is desirable such strong contrasts of value are often used. When such emphasis is undesirable light and dark contrasts are closely related. Usually such lessening of value contrasts occurs toward the edges of a composition. As interest progresses towards the center of interest of a

composition light and dark differences usually also increase in degree of contrast.

Value distribution is likewise an important part of light and dark pattern and results in a tension or balance of lights and darks. By that is meant that identical values are in different quantities placed at intervals over the composition. If such were not the case, and values were placed only in regular progression as in a value scale, the composition would probably resemble a target. While it is desirable that there be in the whole composition a system of light and dark rhythms, it is far from desirable that such rhythms be well distributed.

Distinction between degrees of lightness and darkness is one of the most important perceptions in color observations Every color as it appears in the spectrum band has a certain quality of lightness or darkness. For instance, the value or light and dark quality of yellow is very light, whereas that of violet is very dark. This means that the color combinations should show pleasing light and dark contrasts and relationships as well as pleasing hue relationships. This light and dark is much easier to observe in shades of grey than in color contrasts where differences of hue, such as the difference between green and red, are apt to be confusing.

Opdyke says:[12]

> In studying the light and dark pattern in a painting or a colored print, gradually close your eyes until you are more conscious of its differences of light and dark than of color, for color is apt to confuse the beginner in observing light and dark. View the pattern through partly closed eyes a moment, then open them and see if you can hold it with the added color and detail. If not, partly close them again until the pattern is sufficiently fixed in mind to enable you to hold it with eyes wide open. Study it for a moment simply as a pattern, ignoring everything else in the picture.

When complete gradations of grey from black to white are perceived in varying relationships and degrees of differences, the student is provided with a more adequate background for perceiving not only the extent of light and dark pattern but color relationships as well.

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[12] Opdyke, op. cit., 138-139

D. Form and Space

So far we have considered the significance of materials, lines, shapes, light and dark as important factors in a visual art experience. This brings us to the consideration of volume and form.

In considering the bulk or mass of form we are concerned with measurable weight which has height, width and depth (so called the three dimensions). One of the most tangible expressions of form as created by man is realized in sculpture. Graphic representation of form in two dimensions must rely upon symbols which have come to suggest to the individual the presence of the third dimension.

If we interpret the meaning of form as it is created in sculpture we see that the complete and full realization of the fundamental shapes, that is, the square, circle and triangle, when expressed by an interpretation which considers depth (such as in sculpture), become the cube, the sphere and the cone. That is, one can feel in form, not only up and down and across, but through and around. Form involves the inter-penetration of shape with space.

Sculptural Form:

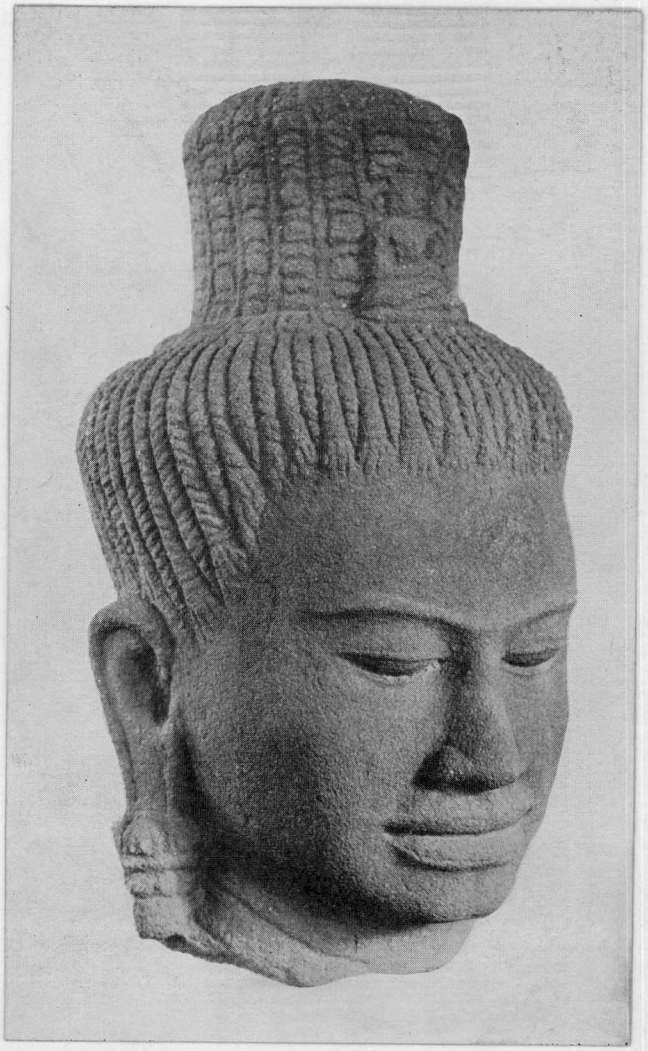
Form, as created by the sculptor, from masses of

material depends for its interest upon the contour of the form itself as it exists in space and also for its ability to reflect light and cast light and shadow patterns. The patterns of light reflection are determined by the convex and the concave qualities of the surface of the material; that is, the contrast of the concave (going in) against the convex (going out); the contrast of round and angular; the contrast of raised and recessed areas and the contrast of dull and sharp edges. These things are the substance of sculpture and are the means by which the sculptor expresses in his own way things of the sculptural language.

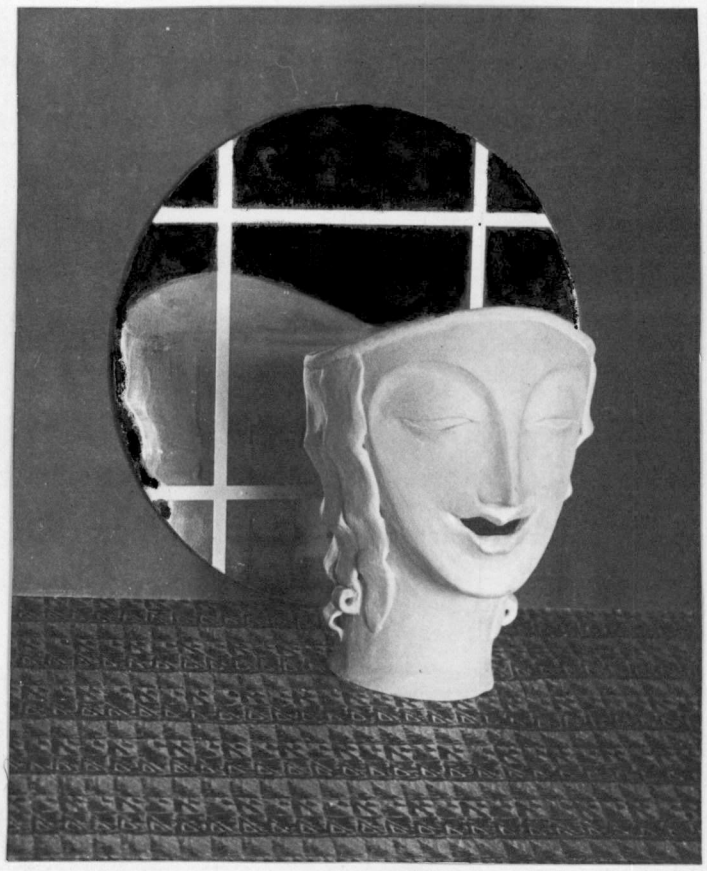
Techniques of Sculptural Form:

As the sculptor considers his materials from which he is desirous of developing expressive forms he is confronted with two classifications of materials adapted to the sculptural language. These materials may in a general way be classified as hard and soft materials. Under hard materials we have wood, stone, marble, etc. Under soft materials our most common substance is clay, varying in consistency according to the locality from which it is dug. Clay and stone are very different materials; the very choice of the material itself determines the technique or the manner of working. Clay cannot be treated in the same manner as stone. One is hard, brittle and resistant; the other is soft, pliable and conformant. Each must maintain its own peculiar character in the final sculptural creation.

As the sculptor works with stone as his chosen



SANDSTONE HEAD OF A CAMBODIAN BODHISATTVA (9TH TO 12TH CENTURY) FROM THE SEATTLE ART MUSEUM. THE TECHNIQUE USED IN THIS SCULPTURAL EXPRESSION INVOLVES A CUTTING INTO THE ORIGINAL MASS AND TAKING AWAY A PORTION OF THE MATERIAL.



HEAD BUILT OF CLAY WALLS AROUND A HOLLOW CENTER. THE SAME SCULPTURAL TECHNIQUE IS EMPLOYED IN THE BUILDING OF A VASE FORM. THIS IS ESSENTIALLY A BUILDING UP AND OUT TECHNIQUE.

medium he must cut into and take out a part of the material to reach the desired form conceived within the block. This results in cutting or driving into the surface of the material with a tool, such as a chisel. There can be no going back, each stroke must be final, decisive and definite. This is essentially a taking away process as contrasted with the pliable clay technique, which is a building up and an adding to process.

In choosing the soft, pliant medium of clay the sculptor commits himself to a different manner of treatment. The pliability of the clay is best suited to a pushing in and out treatment. Such is the technique of "ceramics", a term which refers to objects or utensils of earthenware. Thus, a vase built of walls of clay, which are capable of being moulded out as well as in, illustrates this type of sculpture.

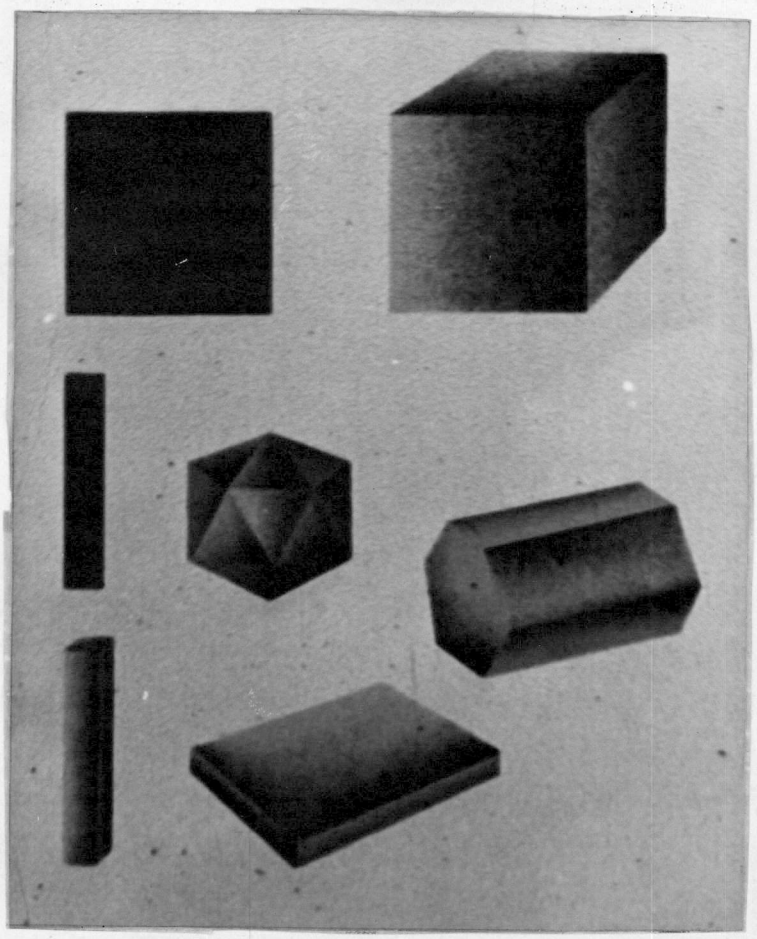
The "driven-in" technique of sculptural treatment well adapts itself to more formal and monumental types of form creation. The dignity and enduring quality of stone, marble and wood necessitates a different technique because of the scale (relationship of size) as well as the material limitations.

Form and Space in Painting:

We have observed that sculpture works with masses of material to create form; concrete things are dealt with

and there is a "building up" process from materials of the environment. Painting, on the other hand, is concerned with the different problem of creating the illusion of form and space by means of color and composition on a two dimensional plane or surface. To create such an illusion painters have utilized in composition a variety of symbols, ranging in complexity from position and size of objects to the geometric rules of Linear Perspective. Space illusions have been created according to the variety of life interests and the varied ways of seeing which are existant in the world. Perspective, or the means of observing space and distance, corresponds with the particular way individuals view the world about them.

A step into space expression is indicated when shapes are shaded or show one side darker than the other. If we take a circle and shade or darken one edge, we have suggested light reflecting upon the surface of a sphere, a form which has thickness. The play of light upon surfaces or planes of objects project these surfaces back and forth according to light and dark relationships. It is thus possible to show the thrust forward and backward, the in and out movement of surfaces on a two dimensional surface



-A SQUARE AND RECTANGLE DEVELOP INTO A CUBE AND BLOCK WHEN THE THIRD DIMENSION (DEPTH) IS EXPRESSED. THE HEXAGONAL AND CRYSTALLINE FORMS ALSO ACHIEVE DEPTH BY LIGHT AND DARK SHADING AND LINEAR PERSPECTIVE.

by means of light and dark shading.

Another manner of suggesting the existence of form in space is by diminution of size. We see objects in the foreground as larger than objects in the distance. Now, intellectually we may be quite aware that the trees nearest us are no taller than those a block away. Yet most expressions of space indicate an increase in distance by a decrease of size. This concept of space carried to its complete realization resulted in the mechanics of Geometric Linear Perspective, which we will later consider.

One of the earliest expressions of space as indicated in painting was shown by the position of objects. The over lapping of one object upon another indicated their respective positions in space. The nearest object was drawn on top of background objects. The background shapes were then incomplete and cut over upon by shapes in the foreground. This implication of distance was one of the first used and seems to have even preceded size diminution in the history of Occidental painting.

The Byzantine Mosaics, which are commonly indicated as the forerunner of modern painting, used such a spatial device. These Mosaics, usually made of small pieces of tile or glass, were of a highly decorative character reflecting the characteristic "pattern" quality of Persia and the East. Many of them, however, did show this overlapping of shapes to indicate the position of figures in space. Expression of distance by shape overlapping is also a characteristic quality of Japanese block prints.

Another spatial device consisted of placing the foreground subject at the bottom of the painting. Figures in the background were placed in tiers above these foreground figures, the top tier depicting objects farthest away. This was called "tier perspective" and was a practice commonly employed by the Italian primitives in painting frescos and altar pieces in the churches during the thirteenth and fourteenth centuries. The figures and objects were all drawn as if on a level with the eye; their position in the tier indicating the distance from the observer.[13] This same "tier" device is found in East Indian and Chinese graphic art expressions. Oriental art, however, often reverses the occidental space position and places foreground objects in the upper part of the composition. The same method of indicating space was used in many early American prints. A high horizon line was used and objects placed in layers on top of each other with the foreground objects being the largest.

All of which points to the fact that man, conscious of volume and space relationships, has in a variety of ways attempted to crystalize and materially realize these experiences by means of the visual space arts. He has done this through the centuries by many devices; by dark and light shading; by position and by decrease of size. During the

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[13] Butler, Howard R. Painter and Space. Charles Scribners, New York, 1923. Pp. 25-26.

Renaissance, when there was an awakening of interest in the individual man and in mechanical invention, it was a natural consequence that there should be an attempt to place space expression upon a scientific and highly individualized plane. Many attempts to solve geometrically the problems of perspective were made during the thirteenth and fourteenth centuries and the principle of the vanishing point was known and used at that time. Ucello, in the early fourteenth century made many important experiments with Linear Perspective.

However, it was not until the fourteenth and fifteenth centuries that linear perspective as we know it was taught in the school of Squarcione. This new perspective of the Renaissance determined the amount of space seen in a picture by the limitations of the human eye. This necessitated one horizon line and was based upon the concept of individual man as the focal point of space expression. This concept, resulting in linear perspective, was to influence the succeeding centuries of space expression to their detriment as well as to their benefit. There was little original effort to break with the mechanics of linear perspective until the late nineteenth and early twentieth centuries. Perspective of this type is no longer an ideal of the contemporary school of Expressionism.

E. Color.

The fifth and final basic element of the Space Arts is Color. In dealing with color, which is an universal human experience, students should understand the relationship existing between the physical laws of nature and the pigments which are used in painting.

Because of the diverse interest of mankind in the world in which we live, color has been explained in many different ways. The artist, creating anew with color, is primarily interested in the building and creating possibilities of color. The scientist, interested in discovering and recording fundamental truths, observes color as a resultant of these fundamental natural laws. Such a viewpoint results in the physical explanation of color or the explanation of color according to the science of Physics. Thus,we have color explained both from the viewpoint of the scientist and the viewpoint of the artist. Each explanation has its own characteristic interpretation. If we wish to understand color as an experience of great diversity we must resort to both explanations.

The Physical Explanation of Color:

The Physical sciences have given us the following explanation of color according to the phenomena of matter and

energy (light). According to this explanation light travels in waves of different lengths.[14] These waves vibrate constantly and we identify certain colors according to the frequency (degree of rapidity) of the vibrations. If the vibration is rapid the waves are short, if the vibration is less rapid the waves are long. The longest and slowest waves which our eye senses are those which we identify with red, the next longest produce the sensation of green, and the shortest and most rapid vibrations are those which we sense as violet. There are, on either side of these wave lengths other waves which the human eye is not suffieiently sensitive to register. Those shorter than violet we commonly hear referred to as the ultra violet ray (used in medical practice) and x-ray. Those longer than red are called the infra-red rays.

This explanation may seem very complicated and technical. In order to simplify the phenomena of light vibration, let us compare it to ripples created in a pool of water by means of shaking a stick. If we shake the stick quite rapidly the distance between each crest of the ripple is short.

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[14] This is called the "Spectrum Theory of Color", and was first discovered in 1666 by Sir Isaac Newton, an English Physicist.

The more slowly we shake the stick the farther apart are the ripples. The distance from crest to crest of the ripples may be compared to a wave length. The slower vibrations correspond to the ripples which are farther apart, such as red. The more rapid wave lengths correspond to the ripples which are close together, such as violet.[15]

How Light is Altered:

Light which is transmitted through space with astonishing rapidity is compounded (made up) of these three fundamental vibrations, red, green, and violet-blue vibrations. As light strikes matter or material there are three important processes that take place. They are (1) the process of refraction; (2) the process of absorption; and (3) the process of reflection.

Refraction and the Spectrum Band:

By refraction is meant the change of direction of the ray of light. This change of direction is effected by a glass prism. A prism is a piece of glass which is bounded by two opposing and inclined planes. As the ray of light is changed from its course by the prism, the various wave lengths are bent in differing amounts. The short wave lengths (such as violet) showing the greatest deviation; the long wave lengths (red) showing least deviation.

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15 Martin, L. C. Colour and Methods of Colour Reproduction. D. Van Nostrand, New York, 1923. Pgs. 1-3.

The process of refraction may be observed by holding a piece of cut glass or a glass prism in the sun light and the Spectrum band will consequently be reflected.

The Spectrum band is an image formed by light rays in which the colors are arranged according to their order of refraction or wave length. The Spectrum is formed in nature when light is refracted by rain drops and the Rainbow is reflected. The colors observed in this manner, however, are usually paler than if we view them through such a scientific instrument as a Spectroscope. The Spectroscope is equipped with lenses and a prism, and if we view the refraction of light through such an instrument we are able to observe colors in their purest and strongest state.

Absorption and Reflection:

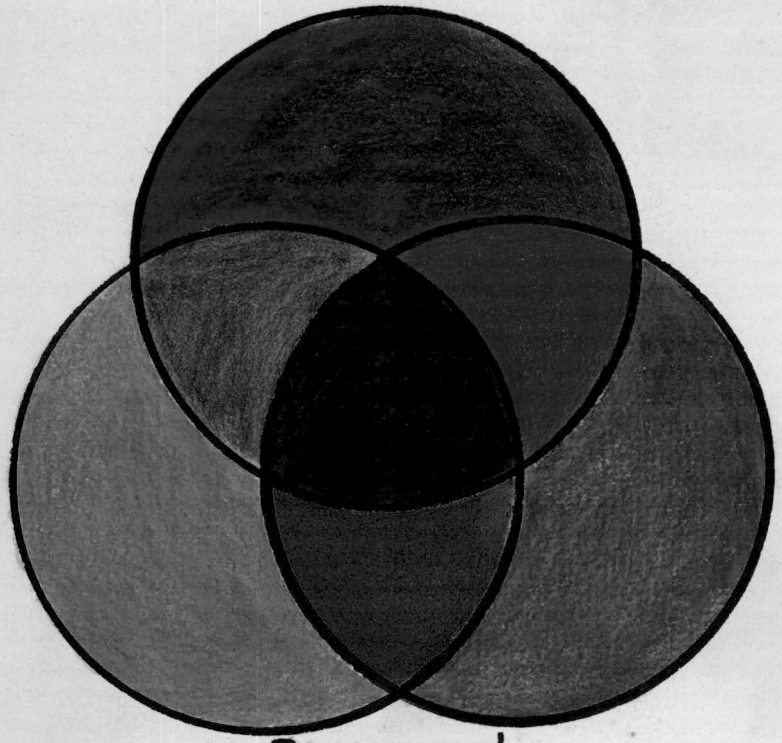
As light passes through space, it not only is refracted but also absorbed by the material with which it comes in contact. This material absorbs part of the light and the part which is not absorbed is reflected or thrown back to the eyes of the observer. This is consequently the explanation of all pigments, dyes, inks, etc, as well as other colored materials. A blue pigment, for instance would absorb from white light the green and red vibrations reflecting only the blue vibrations. Pigments or paints, then, are materials which absorb part of a ray of light reflecting only one or a single combination of light vibrations.

Color Theories:

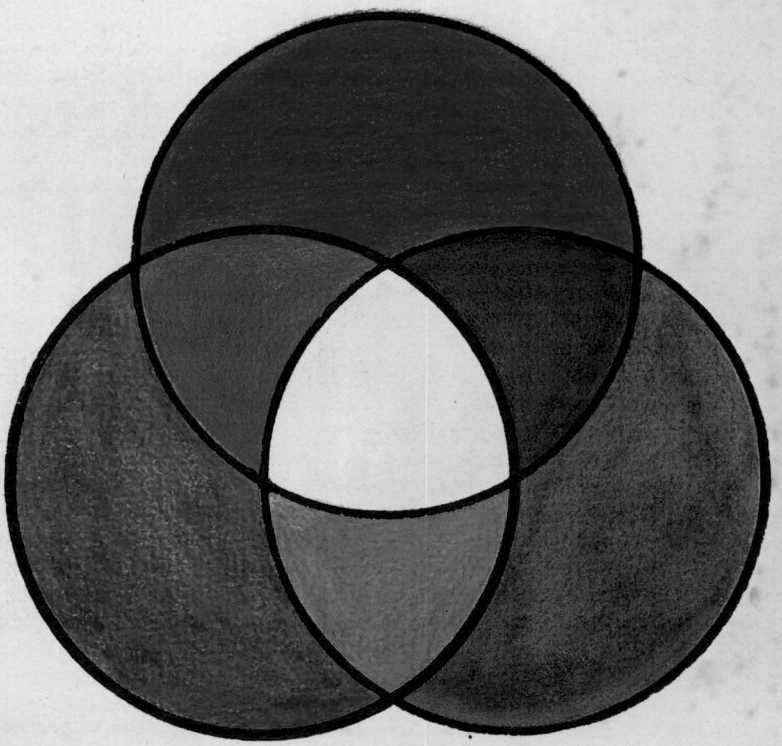
The theories of color and color mixtures are too numerous to outline in detail here. However we shall attempt to point out the main points of difference between two differing aspects of the same phenomena That is, the points of difference between regarding color as a mixture of lights and of regarding it as a mixture of pigments.

In the fore-going discussion of the phenomena of color, the explanation has been based upon the "Light Theory" which is the physical and scientific explanation of color as a natural phenomena and physiological sensation. You will recall, likewise, that Pigment was described as "materials which absorb part of a ray of light reflecting back one particular vibration or combination of vibrations." The main point of difference might be said to exist in the concept of cause and effect. That is, pigment is the effect of light (the cause) striking and reflecting from a certain material. It is obvious that we are then discussing two different aspects of the same phenomena, which because of their integral relationship and natural succession of observation in nature are often spoken of as identical. Much of the disagreement on color theory has arisen from failure to recognize this fundamental difference.

Conflicting Color Theories



Pigment



Light

Light and Pigment:

This fact has necessarily given rise to two theories of color; the Light Theory and the Pigment Theory. Although the manner of observation is different, they both deal with the same natural phenomena. We have already discussed the Light Theory and reviewed it from both the physical and physiological view points. Briefly the Light Theory is based upon the refraction of light into elemental vibrations. Man has a certain biological and psychological reaction to this phenomena.

Pigment Theory:

Let us regard the basis of the Pigment Theory which has for so long enjoyed sovereignty in unscientific and artistic circles. Along about the early part of the 19th. century, a certain German printer discovered that by means of using three fundamental pigments, he could mix an entire range of color hues. These fundamental colors were red, yellow, and blue. It was found that by mixing red and yellow, orange was formed; yellow and blue produced a kind of a green; and blue and red produced a violet. For some time the belief persisted that theories based on pigment and light were identical. It was concluded that because yellow and blue pigment produced green, yellow light and blue light would likewise produce green light. However later in the 19th. century two German scientists,

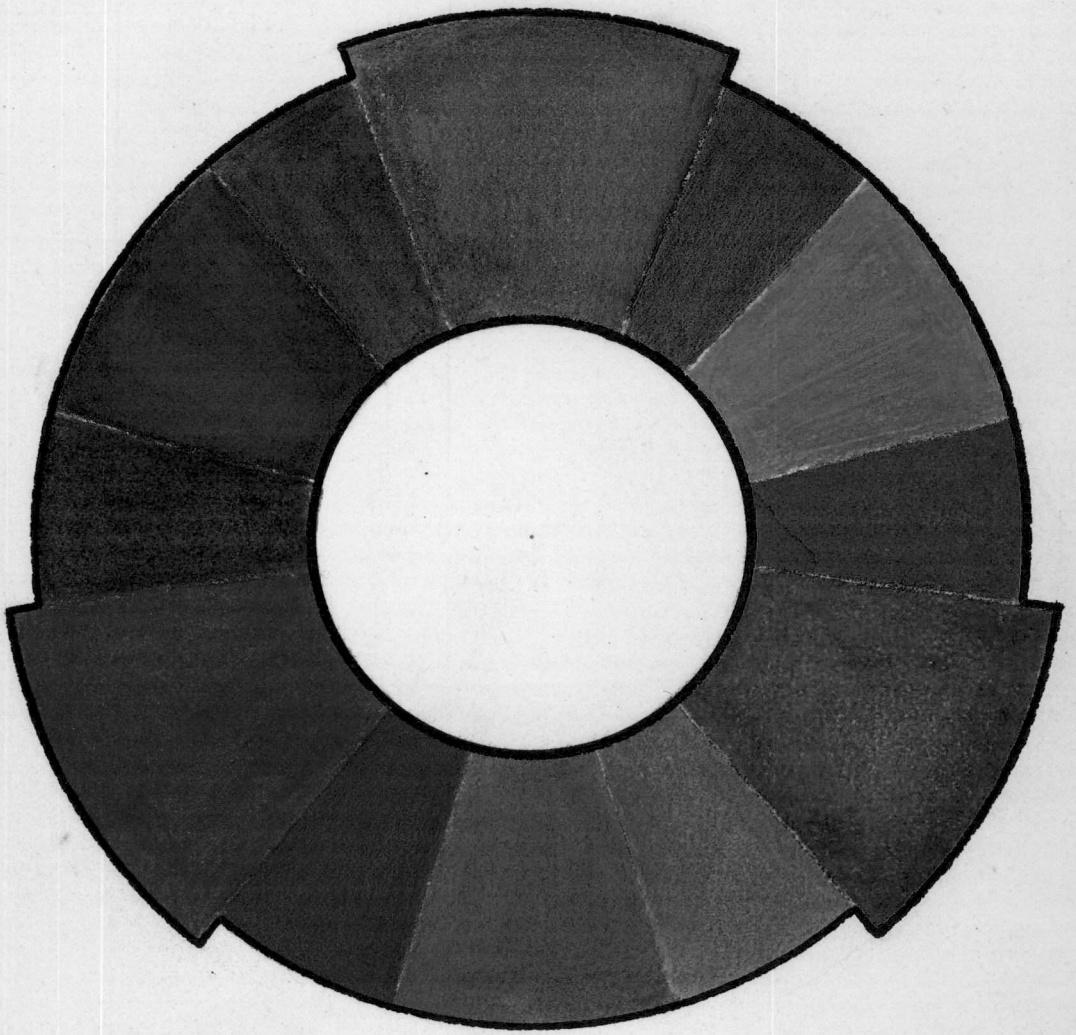
first Wunsch and then Helmholtz, established by scientific experiment the fact that the inter-mixture of yellow and blue light did not produce green, but white light. It was then found necessary to re-organize the then existing theories of color.

It will be seen that the differing characteristics of colors as produced by lights and colors as produced by pigments would necessarily lead to different conclusions. For this reason the adherents to the light theory have chosen one set of colors as their fundamental or standard colors; the adherents to the pigment theory have chosen a different set. Both of these groups, however, have seen the advisability of arranging the fundamental colors in some kind of logical sequence which would facilitate classification and identification. They both have chosen the circle as a convenient method of color arrangement.

The Color Wheel or Circle:

The color wheel is the spectrum band placed end to end to form a continuous and rhythmic graduation of color hues. As was previously mentioned, the Pigment Theory named as the primary colors, red, yellow and blue. These primaries were believed to inter-mix to produce the secondary colors of orange, green and violet. However, the variables included in this conclusion are numerous; the greatest difficulty being a standard from which we can select a yellow, a red, or a blue. So far the only criteria for a

The Color Wheel



pure yellow, a pure red, and a pure blue, are those hues as produced in the spectrum band. If we take this as our basis of color hues we are relying upon the scientific explanation of color which is called the "Light Theory". As we have seen, Helmholtz, many years ago, proved by scientific experiment that yellow and blue light do not produce green light, but white light. It is impossible to produce a pure green by mixtures of yellow and blue pigments. And, as we have seen that pigment is the result of absorption and reflection of light rays, we shall encounter less difficulty if we base our theory of color upon the most reliable method which we know --- that of Scientific Method.

From this point on, then, we shall base our assumption upon the Light Theory of color.

Fundamental Color Sensations (Primaries):

The primary or fundamental color sensations obtained by refracting a ray of light are according to the Light Theory; Red, Green,and Violet Blue. That is, these are the colors from which all other colors in the Spectrum Band are formed. They are fundamental in their nature and not producible by mixtures. They in turn, however, may inter-mix to form other hues present in the spectral sequence.

Secondaries:

The secondary colors are formed by inter-mixtures of the Primaries. Red and Green light produce Yellow. Green and Violet Blue produce Turquoise Blue, and Red and Violet

Blue give Magenta (a Reddish Purple). These six hues, Primaries and Secondaries, comprise the standard colors of the color wheel. They, in turn, inter-mix to produce transition or intermediate colors.

Intermediates:

The Intermediate colors formed by combinations of the Primaries and Secondaries are Yellow Green, Orange, Scarlet, Red Violet, Blue, and Blue Green. Thus, the six standard colors; Red, Green, Violet Blue, Yellow, Magenta, and Turquoise Blue, along with the six Intermediates: Yellow, Green, Orange, Scarlet, Red Violet, Blue, and Blue Green, comprise the twelve colors of the color wheel according to the light theory of color.[16]

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16 "The range of hues from violet to red which we know exist as color sensations by inter-mixtures of red and violet blue light do not actually exist in the Spectrum. Thus, their addition to the color wheel is purely artificial, for the sake of convenience and system; they cannot be said to exist as parts of the actual spectral sequence. Ostwald Op. Cit. Chart IV.

Complements:

After arranging these twelve colors in natural prismatic sequences in a circle, we find that by drawing diameters through the circle from any one color we arrive at an opposing or complementary color. Thus, if we connect opposing colors we have the following pairs of complementary colors: Green and Magenta; Yellow-Green and Red-Violet; Yellow and Violet-Blue; Orange and Blue; Red and Turquoise-Blue; and Scarlet and Blue-Green.

Summary of the Constant Factors of the Space Arts Experience.

The factors of visual experiencing which have just been discussed are obviously merely an outline of the "constant factors of art experiencing." They seek to point out in a definite way the potentialities of the concepts suggested by Line, Shape, Dark and Light, Form and Color.

It is believed by the writer from an analysis of authorities in this field that these are the constants, ever present, but changing often in emphasis, in art experiencing; that they should, consequently, form the nucleus of the space arts curriculum. By this is meant that the curriculum stressing either appreciational (contemplative) or creative (productive) can use these constants as a nucleus.

There has been no attempt to develop teaching technique of these constants, but only to determine the core of the curriculum, which is a necessary and preliminary step. The space arts teacher must by means of these "tools" broaden the perception and interests of students. Through a diversity of approaches to these various "constant factors" it is likely that some particular few will appeal to individual students. It is believed that such a broadened concept of Line, Shape, Light and Dark, Form, and Color will furnish the basis for a more diversified experiencing and enjoyment of the Space Arts.

VI. Conclusion

The development of this study has led the writer to certain conclusions concerning the basic factors about which to organize a Space Arts curriculum. From a survey of varied viewpoints relative to the Space Arts there are certain outstanding viewpoints which have great influence in determining attitudes towards the Space Arts in general. These attitudes carry implications for developing a Space Arts curriculum. It was believed important to point out these viewpoints. The first such statement which results from the study is that

1. Space Arts Experiencing may elicit emotional and intellectual responses on the part of the individual: science in the form of psychology has contributed the most significant knowledge relative to dealing with intellectual responses.

We have seen that psychology has pointed out two distinct reactions to Space Arts Experiencing; these two reactions being differentiated as emotional and intellectual. There is little definite agreement among the various schools of psychology as to the nature of the appreciative or creative emotional responses. Much more has been done in defining the nature of the intellectual response. Powers and Uhl

compare this intellectual response to problem solving, painting out that, whereas the problem solver in a purely intellectual solution (such as a problem in mathematics) has his goal pre-determined and set, the problem solver in creative work must determine his goals as he proceeds, determining their rightness or wrongness as the work goes on.

Tests have been compiled which deal predominantly with this intellectual factor. The McAdory Test sets as its goal the determination of preferences for "shapes and line arrangements, values of dark and light, and color - use of hue, value, and chroma."[1]

In discussing the attitude for approaching works of visual art Barnes[2] states as regards psychological fundamentals, the following:

> Everything that human beings do is ultimately dependent upon the feelings that things and acts awaken in them. There are pleasant experiences and unpleasant, and we all seek the pleasant and avoid the umpleasant. This is a tendency which needs no justification. Human beings are so constituted as to have preferences, and in the last analysis these preferences are something behind which we

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1 McAdory, opus cit., P. 5.

2 Barnes, A. C. The Art in Painting. Harcourt, Brace & Co., New York, 1928. P. 24

> cannot go. Our feelings, if not irrational, are at least non-rational. In the long run, everything that we do is done for the sake of some experience intrinsically enjoyable, and even when we are compelled to accept pain and privation, we do so for the sake of a positive value which outweighs their unpleasantness.

A second viewpoint considered of significance in analyzing general attitudes of influence in determining the basic factors of a Space Arts curriculum is that

2. The two phases of Space Arts Experiencing are "productive" and "appreciative" or "contemplative"; these two phases while differing in expression are closely allied, having a "producer" and "consumer" relationship; they can be separated only for artificial purposes of analysis.

In this study we have attempted to point out the varied approaches to Space Arts experiencing. The first differentiation (emotional and intellectual) was classed under the general term of "Psychological Viewpoints". Another viewpoint which is philosophical in nature differentiates between those individuals who treat the Space Arts Experience as a "productive" or a creative experience and those who receive the art product as a "contemplative" or appreciative experience. We attempted to point out that this difference was not so great as it first may seem, and that as eventually both producer and consumer

must meet through the work of art it is desirable that we isolate common grounds of understanding.

John Dewey[3] says:

> In short, art, in its form, unites the very same relation of doing and undergoing, outgoing and incoming energy, that makes an experience to be an experience. Because of elimination of all that does not contribute to mutual organization of the factors of both action and reception into one another and because of selection of just the aspects and traits that contribute to their interpretation of each other, the product is a work of esthetic art. Man whittles, carves, sings, dances, gestures, molds, draws and paints. The doing or making is artistic when the perceived result is of such a nature that its qualities as perceived have controlled the question of production. The act of producing that is directed by intent to produce something that is enjoyed in the immediate experience of perceiving has qualities that a spontaneous or uncontrolled activity does not have. The artist embodies in himself the attitude of the perceiver while he works.

We see that what seems to be a dual quality of art experiencing is really a difference of interpretation. It is hence possible for the appreciator and creator to meet on common ground through the work of art. This is made possible when, through education, the common ground is understood in terms of art elements. When these art elements are objectively taught as parts of the art experience it will be a great step forward towards achieving such a goal

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[3] Dewey, opus. cit., Pp. 48

as is described by Chapman and Counts: "The great educational task is not that of training the genius; rather it is that of creating and fostering in the masses, the source and inspiration of talent, a growing consciousness of and interest in beauty."[4]

The third and final statement which emerges as a conclusion of the study is as follows

3. The basic factors of the Space Art Experience remaining the same regardless of individual interpretation are Line, Shape, Light and Dark, Form, And Color. These are the constant factors about which a Space Arts curriculum must be constructed.

As Space Arts experiencing is an universal human experience, eliciting either emotional or intellectual responses; or as the experiencing may be of a productive or contemplative quality, it is essential that the basic factors of the Space Arts curriculum be of a sufficiently plastic quality to envelop this wide range of activities. It is believed by the writer, from the evidence as outlined, that the visual factors of Line, Shape, Light and Dark, Form, and Color do fulfill these requisites.

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[4] Chapman & Counts. op. cit., 319.

Allen Tucker[5] summarizes the quality of these visual factors in the following statement:

> I will now take up the essentials of design; the matter out of which design is made. These essentials are form, line, color, light and space.
>
> In the first place, these essentials are inter-dependent, they do not exist alone. They are part of the incredible unity of created things. No single one of these essentials exists without all the other essentials. One essential or another may predominate, but always all are present in some degree. These essentials in art are really visible ideas. By themselves they are entirely empty; they must be filled with ideas, with spirit, in order to exist. These essentials are alive in nature and must be drawn forth and embodied in art without losing that life. Life passing through man becomes idea. Then these essentials are all a part of each other. Line is the edge of form. Form is the body contained by line. Space is where form only can exist. Form is that which reveals the existence of space. Color is the matter out of which form grows. Form is the spacial existence of color. Light is that which reveals all the essentials and the other essentials in turn make possible the appearance to us of light.

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5 Tucker, Allen. Design and the Idea. The Arts Publishing Co., New York, 1930. Pp. 33-34.

Thus, although we may analytically select these factors, they cannot be viewed as separate entities standing alone and isolated. They are all an integral part of the oneness of the visual art experience. For purpose of study they can be pointed out and emphasized. The synthesis or the placing of emphasis is of utmost importance. It will be involved in the technique of teaching the space arts, as well as in the technical organization of the curriculum itself.

It is believed that the various phases of the Space Arts such as painting, architecture, sculpture, decoration, etc., can be adequately understood on the basis of the constant factors pointed out. It is also believed that these factors offer a sufficiently elastic interpretation, allowing for differences of individual respnnses. This is an important consideration when dealing with groups lacking homogeneity, as do our public school art classes.

It is concluded that the present task in Space Art education is to enlarge as much as possible the concepts of Line, Shape, Light and Dark, Form and Color; to show the relationship of these concepts to the varied expressions of the Space Arts; to relate Space Arts experiencing to modern life. This study in elaborating upon the visual elements of Line, Shape, Light and Dark, Form and Color has attempted to point out how these concepts may be developed and expanded in the teaching of the Space Arts.

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