A STUDY OF SPACE AS AN ELEMENT IN PLASTIC DESIGN

by

Helen Anne Wall

A Thesis Submitted to
the Faculty of
the Consolidated University of North Carolina
in Partial Fulfillment
of the Requirements for the Degree
Master of Fine Arts

Greensboro
1951

Approved by

Gregory D. Ivy, Adviser

TABLE OF CONTENTS

Chapter I

The Expanding Universe

The history of man is the story of an expanding universe. Between the very narrow concept of the universe held by primitive man and the cosmic concept that we hold today there lie centuries of slow but steady development. The desire to discover the physical limits, and to attain to the spiritual limits of his universe has motivated countless excursions into the unknown and has gained for man a vast knowledge of the world in which he lives. "We possess today the most constructive and clear understanding of ourselves and our universe that man has ever held."[1]

Physically, our universe now knows no bounds. Man no longer seeks the limits of the seas or the continents; he knows already the measurements of the earth. It is rather towards the heavens that scientists turn their giant eyes to probe further the mysteries of the cosmos. Whether it is finite or infinite has not yet been determined but the vastness of the space already perceived, the complexity of the system in which groups of galaxies move with other groups and within other solar systems move with our own is an overwhelming phenomena.

Scientists and philosophers throughout the ages have sought knowledge of and propounded many theories as to the origin, history,

---

[1] Harry Holtzman and Martin James, "Measure of Man," trans/formation, 1:1, 1950.

and future of the universe. In recent years these theories have dealt increasingly with the idea that rather than being unchanged and static since the moment of its creation the universe has undergone many changes and is, in fact, in a constant state of flux. Immanuel Velikovsky in Worlds in Collision offers a theory—substantiated more by the literature of the world than by scientific data—to the effect that there have been recent irregularities in the movement of our own particular planetary system and that there has not always existed the particular order we know today. The extraordinary theory which the English mathematician and physicist, Fred Hoyle, offers in a series of articles in Harper's Magazine[2] pictures the universe in a state of continuous expansion with new planetary systems coming into being every few hundred years as a result of the explosion of a supernova. Though the validity of these theories cannot be ascertained at present, they offer subject for further speculation as to the real nature of the universe.

Not only has man's knowledge of the measurements of the planet on which he lives been greatly extended and his knowledge of the measurements of the cosmos been increased but he has also explored many other directions in seeking the limits of his universe. He has discovered 97 of the elements of which the universe is composed and from beneath the surface of the earth, from the waters of the earth, and from the air

---

[2] Fred Hoyle, "The Nature of the Universe," Harper's Magazine, 202, December, 1950—April, 1951.

above the earth he has extracted these elements and learned how they are combined to form his world. Today this knowledge is culminated in man's ability to split the atom.

Along with all his other discoveries man has not failed to expand his knowledge of the living organism. He has discovered, extensively investigated, and classified innumerable living forms, both plant and animal. Countless volumes lining library shelves around the world tell the story of how these forms live and function but none disclose the secret of life itself.

Man has not neglected in his study of the living organism to study himself. Scientists have made numerous discoveries which have aided medical men in keeping man as a physical organism alive and functioning properly. Also, the mind of man has been studied extensively in recent years and the sciences of psychology and sociology have begun to bring forth increased knowledge as to the kind of being man is, his actions, his reasons for acting, and the nature of his relations with his fellow man. His past development has been traced by anthropologists and historians who have discovered his expansion through succeeding civilizations but have as yet failed to discover his origins.

We ride today on the crest of the wave which took shape with the beginning of the Industrial Revolution and which is reaching ascendancy in this period of technological and industrial supremacy. Man has used the knowledge at his command to create a gargantuan technological potential--one which has produced a society of immense complexity and one

which, unless it be restrained, will consume man and make him a subserviant element in its own complex mechanism.

At the same time that astrophysicists have extended the measurements of the universe technologists have, through their discoveries and inventions, caused our world to shrink. The many means of traversing the earth's surface and the speed with which it is possible to do so combined with the ease with which information can be promulgated among the peoples of the earth have made all men neighbors in a very real sense. We who live on the earth are now interdependent; no man, no nation, no continent can exist without another. The complexities and conflicts which this reality suggests are obvious; equally obvious are the possibilities inherent in such a reality for the attainment of a level of development never before realized by man.

Actually, we stand now on the threshold of development; we are ready to use that great body of fact which has been built up over the long period of man's history and to which we have added so much in the last few years. The greatest cause for concern at the present time lies in the fact that in our thinking, in our concepts of government, in our concepts of human relations, in our spiritual concepts we lag far behind our development at the physical level. We have yet to make the fullest possible use of the findings of scientists and technologists in all fields in formulating the concepts by which we live. We must abandon in our social experience the concept of absolute individualism in favor of a new concept

of social relatedness and interdependence.[3] Here lies the challenge; here lies the chance to survive. We must use all the knowledge of the physical universe available to us to reach the ideological level necessary for continuing development. "A new type of thinking is essential if mankind is to survive and move to higher levels."[4]

Man's universe has never been limited solely to that world which he perceives by means of his bodily faculties. He has continually sought to attain to the spiritual limits of his universe even as he has sought to discover the physical limits. The concept of God, though it has changed character in different civilizations, has been a constant one. Whether it has been a monotheistic concept or a polytheistic one, whether an anthropomorphic concept or a concept of God as an abstract quality, it has always represented man's inadequacy and his need for a supreme power to whom he can either bow down in obedient and fearful acknowledgement of authority or to whom he can strive to attain in spiritual wisdom.

" . . . On the whole, during many generations, there has been a gradual decay of religious influence in European civilization."[5] In contrast to primitive groups and to most early civilizations in which one concept of God prevailed one finds today a hodgepodge of theistic concepts

---

[3] S. I. Hayakawa, "The Revision of Vision," introduction to Gyorgy Kepes' The Language of Vision (Chicago: P. Theobold, 1944), p. 9.

[4] Harry Holtzman and Martin James, "Measure of Man," trans/formation, 1:1, 1950, quoting Albert Einstein.

[5] Alfred N. Whitehead, Science and the Modern World (New York: New American Library, 1949), p. 187.

existing in our society. There are no longer strong spiritual bonds which unite a people in their aspirations and attainments toward God, and man is left floundering in a sea of multifarious and conflicting theologies with no absolutes by which to chart his course.

The general breakdown in spiritual forces has been an accompaniment of the industrial revolution and the rise of the technological age. As the rising interest in industrial development began, man was swallowed up by the machine and spiritual concepts were sacrificed to a pragmatic doctrine. Today man is beginning to recognize the need to free himself from the stranglehold of the machine; he recognizes his need for spiritual values, yet he has none to turn to. The old values do not suffice for the new age in which he finds himself and he has had no time to bring them up-to-date or to formulate new theistic theories. It is in his spiritual attainments that man has failed to grasp the potentialities of his universe and it is in this realm that he must move forward.

Art, which is a manifestation of man's spiritual values, today finds itself reflecting many and varied values. Each artist, whether he creates with color and line, with words, with sound, or with volume finds himself, if he is truly aware of his world, recreating in images that are his own and represent the vantage point from which he alone experiences the world. No longer does art reflect a world united by strong spiritual bonds and no longer does art occupy an ascendant position in our civilization. The pragmatic philosophy of a technological age has here, too, gained supremacy. If we are to survive and develop we must recognize the

value of art as a spiritual force and encourage its reinstatement as a vital part of our lives. " . . . The soul would wither without fertilisation from its transient experiences. . . . This fertilisation of the soul is the reason for the necessity of art."[6]

This is a picture of an expanded universe—a world in which man has not limited himself to actualities but has sought out that which exists beyond the actual. It is a world in which new relationships exist—have been forced into existence—a world in which space has become at once expanded and non-existent, a world in which man holds a new power and is held by the power of his new knowledge. It is a world of complexities, of dynamic tensions, of fears, and of desperate unqualified hope.

---

[6] Ibid., pp. 201-2.

Chapter II

Art--Interpretation of the Universe

The artist is the interpreter of the expanding universe. It is in terms of his knowledge, feeling, and understanding that he perceives the universe which he in turn interprets in forms of his own creation. To the degree that he has assimilated his universe and the knowledge at bay in it does he express a true conception of his world--his work itself represents the universe realized.

Changing spatial concepts have characterized art development throughout the ages, and it may be seen that spatial concepts have varied with and been expressive of the degree of knowledge of the universe--both physical and spiritual knowledge--possessed in any given period. Artists through the ages have found space one of the most effective elements for expressing what they know and feel about their world.

Palaeolithic man, as he drew on the walls of his cave by the light of burning oil in a shallow vessel, was concerned with depicting single forms--the significant forms in his experience. There was no attempt to depict them in meaningful relationships. Like a child who has not yet realized himself as a part of his total environment, early man could not conceive of his universe in its totality and subsequently was unable to conceive spatial relationships in visual representations of his world. His understanding of space and time was limited.[1]

---

[1] Gyorgy Kepes, Language of Vision (Chicago: P. Theobold, 1944), p. 69.

With the rise of civilization on the Mediterranean shores there is evidence of increased spatial awareness. The simplest statement about space is made, the statement of relationship of size and relationship of overlapping forms. Size corresponds to a scale of values rather than indicating distance. Overlapping of forms is the only indication of depth in Assyrian, Babylonian, and Egyptian painting and relief carving. Space is not used to limit representations to any specific time or event but is used to suggest the universality of events. It is a space indicative of a world in which time and life are of little value and only the enduring, absolute, and superior nature of unobtainable gods is of importance.

With the shift of the Mediterranean scene to the peninsular civilizations of Greece and Rome we have a complete shift of emphasis in creative and spiritual concepts. The basis of Greek culture is an increased awareness of man with a subsequent humanization of the gods. Art more than any other phase of the culture is a tribute to man as a human being endowed with powers beyond those possessed by any other animal and in it is manifest all that makes Greek culture so significant. In Greek painting, which occupies a position secondary to that of sculpture and architecture, there can be seen the development of a tridimensional spatial concept with limited use of perspective and shading. Space was a means of linking man with his environment and of actually depicting him in his world.

The Romans absorbed the Greek culture and carried it to its ultimate culmination in an almost completely secular civilization. In

their paintings they made increased use of perspective though it was not the linear perspective which characterized the Renaissance. In Roman painting spatial depth was created by the suggestion of atmosphere and in the color of the picture plane, by diminution and convergence, while in the Renaissance space is theoretically measurable in relation to the spectator and has material form.[2]

Turning from the Mediterranean world and moving eastward one finds in the Orient quite significant developments, developments different from those which we have been examining. Great spiritual leaders in the East have repeatedly expounded doctrines not of the importance of the individual man but of the importance of the loss of self in contemplation of the universe. Various sects emphasized to a greater or lesser degree the importance of meditation, of contemplation, of attaining to a state of Nirvana, but fundamentally the emphasis has always been on the insignificance of man, his identity with nature, and his realization of himself as a part of the infinite universe.

Space is used in the Orient not to depict that reality which is realized through the senses but to depict that ultimate reality which only the contemplative spirit can know. It is in the field of landscape painting that the Oriental artist is best able to realize his spiritual concepts. There was no use of perspective, no use of shadows in Chinese

---

[2] Miriam Schild Bunim, Space in Medieval Painting and the Forerunners of Perspective (New York: Columbia University Press, 1940), p. 178.

painting; rather it was with fusion of forms, with flow of line, with the use of great emptiness that the artist expressed a sense of participation in the universal life. Space was not an illusion but actually existed on the two-dimensional surface of the painting.

In the Early Christian and Byzantine art there was a return to conceptual representation as opposed to optical representation which had been characteristic in the later phases of classical development.

This was the period of consolidation of the Christian religion, the period in which its influence became absolute. It differed from previous absolute theisms in that its followers accepted one god, a god of love and of forgiving powers whose chief prophet was a man of divine origins, Jesus Christ.

In this period, which placed an emphasis on a transcendental rather than on an experienced world, a symbolic rather than a wholly imitative art was favored. Symbolism was not presented in diagrammatic form but retained a basic reality as an aid to its didactic purpose. The background became a fixed gold or blue with features of the environment, the setting, and subordinate figures presented in a brief indicative form and as cubic groups. The picture plane became a concrete background independent of the figure or its accessories for constructive features.[3] Two-dimensional space with its complete dissociation from the world of sensual reality is used to interpret that nature of man which is beyond the real.

---

[3] Ibid., pp. 42-44.

In the 14th century in Italy we find a changing attitude coming to the fore. It is an attitude which represents an increased consciousness of man and a desire to realize man's potentialities. The confluence of Byzantine and Gothic elements in Italian art, the beginnings of economic expansion, the increase of secular culture, and the beginnings of humanistic thinking characterize the period of transition from medieval to Renaissance culture and a subsequent transition in concept of space. It is a transition from the medieval concept of the picture plane as a formal decorative surface behind the figures to the Renaissance concept of a tridimensional and representative environment enveloping the action. Duccio and Giotto in their work mark the transition and with the increased naturalism of the figure, the coordination and interrelationship of figures and background, and the intercommunicating groups of figures, they lead us into the full flowering of the Renaissance.[4]

The one word which seems most characteristic of the Renaissance is Humanism. Man bursts forth from the chains which have kept him bound in subserviance to forces greater than he and begins on the search to discover these forces and the mystery of their existence. The Renaissance sees the beginning of extensive scientific investigations, of an increase in trade and commercial enterprise, of discoveries of new lands, of numerous inventions which lead to the achievements of the Industrial Revolution; it witnesses an increase in learning and an increase in facilities for

---

[4] Ibid., pp. 134-174.

spreading that learning. Most important of all are the changing concepts of man and of his place in the universe. The Enlightenment was an ultimate result of the increase in knowledge and of the changing concepts of man's role in his world and with the culmination of the French Revolution the humanistic doctrine had penetrated completely into Western man's ideology.

In art these changing concepts were manifest in the development of linear perspective and illuminative perspective and the increasingly naturalistic rendering of the human figure. It was the concern of the artist to use space to define the sensual world and to picture man in this world. Artists became interested in extensive scientific studies of perspective and of anatomy and used these studies in advancing the sensual quality of their work. They interpreted their universe in terms of optical representations and actually strove for precise graphic recording of objects on the retina.[5]

It is difficult to discuss the Renaissance in retrospect for today we are living on the fringes of its development. Historians in the centuries to come will either term the 20th century a transition century as was the 14th or a century in which a civilization came to an end. While in science we have forged ahead and made infinite discoveries, discoveries which put us on the threshold of a new age, in our ideologies we retain the traditional patterns of the Renaissance. We continue to accept visual representations of our universe that are realized in terms of

---

[5] Kepes, op. cit., p.68.

traditional Renaissance spatial concepts. "A civilization which cannot burst through its current abstractions is doomed to sterility after a very limited period of progress."[6]

How does the artist today interpret his universe? Those artists who have most completely realized their universe have laid aside traditional concepts and have invented new images and new forms which are more adequate for their expressive needs. They have set out to explore the many and varied ways by which the expanded universe may be depicted. This is the fundamental meaning of the many movements evident in art today—the expressionist, the surrealist, the fauvist, the cubist, the futurist, the non-objective--all are paths made by artists each one of whom feels that his particular way is the most satisfactory one for the times in which he lives.[7] The fact that such varied and divergent paths have been charted is evidence of the complexity of our age and of the non-existence of absolute values.

One element which has been a constant one in almost all these movements is the changed spatial concept. Since the time of Cezanne Renaissance concepts of perspective have been gradually disappearing until in the work of those artists most truly aware of their world it has ceased to exist. In its place there is a new concept of space, a new space which is significant for our times, a new space that lifts us far above the earth-bound, humanly limited level of preceding Renaissance spatial concepts and

---

[6] Alfred N. Whitehead, Science and the Modern World (New York: New American Library, 1949), p. 59.

[7] S. I. Hayakawa, "Modern Art and 20th Century Man," trans/formation, 1:3-4, 1950.

allows us to soar in spiritual ether analogous to that physical ether in which man now charts his course. Space now exists for its own sake. It is an element which the artist is free to use in the way that most adequately serves his needs; it is the environment in which he sets forms and organizes their relationships in the way that for him most satisfactorily expresses man's visual experiences. Some artists have made form and environment interpenetrable by the use of equivocal space; others have set their forms afloat in an environment from which they are completely distinct. All directions are valid so long as the artist accepts no tailor-made concepts but after careful examination of all the possibilities arrives at one which is his own, one which represents his sincere interpretation of the universe.

Chapter III

An Interpretation of the Universe

It is in search of a concept which is valid for me that I have worked in preparing this study.

With the exception of two paintings all of the work in this group is non-objective. I did not run the gauntlet of modern movements and decide that this was the one I would explore further; rather, it came as a logical outgrowth of my previous creative efforts and seemed the only possible way to express the world which I perceive. Unless art has been reduced to an experiment, a mere exercise, the artist will never know but one way in which he can possibly depict reality. His concept of reality may change--without doubt it will change as he experiences more fully his world--but there will never be for him at any one time more than one way of expressing that reality.

Non-objectivists eliminate representational subject matter from their painting and free themselves to use forms and arrangements that are not bound by any attempts to represent the real world as perceived by the senses. For such a non-objectivist as Kandinsky forms and arrangements are used to represent that world which is known to man only through his inner being. The forms which the artist chooses and the relationships into which he places them are determined by inner necessity--that force within him through which the universe speaks in terms personal to the artist.

Man's inner being, his spirit and his essence must have attained to new realizations of the universe and of God. It is this new attainment that he is compelled to express through inner necessity. The artist must celebrate God but it is a new and deeper concept of God that he has come to realize. It is a concept of God as the ultimate Reality, as the creative force that permeates and orders the universe. Science has answered many of the questions which men through the centuries have asked, yet it has not been able to define and identify that ultimate Reality. It is a reality which can be perceived only through super-sensory means and the fundamental questions about its nature remain constant unknown elements in man's cognizance of his universe. One of the instruments by which these questions are answered is art.

Two roads are open to the non-objectivist: he can limit himself to the use of pure geometric shapes or he can use free and personal forms. The first trend is more of a Western concept. The forms are derived from science and modern technology with mechanical instruments becoming the instruments of the painter. Precise and streamlined are the most descriptive terms for such forms. If carried to its furtherest limits art of this kind would be reduced to pure mathematics. The other trend is one of which Kandinsky is representative and is more Oriental in its characteristics. Endowed with greater complexity and intricacy and built on forms derived from Life art in this trend is invested with a living quality.

In my work I explore both directions. The serigraph Composition in Triangles is representative of the first direction. The use of triangular shapes almost exclusively is self-limiting and demands utmost control

on the part of the artist. The shapes are as streamlined and as simplified as a modern machine and as impersonal. The color and the arrangement are the most personal elements in the composition.

It is significant to me that this particular composition was so clearly realized as a mental image that putting it on paper merely involved being completely faithful to the image--a process which required the most rigid asceticism. It involved, first, an unshakeable faith in the validity of the image--a faith in something that is outside of yourself and yet is inseparable from your very being. Then, it was a matter of controlling that image and myself to produce the sincerest statement possible. Composition in Triangles though the earliest of the works in the group remains the most completely realized.

The serigraph Color Composition is representative of the second trend. The shapes are varied and more complex as are the colors. The whole composition is infused with a living quality. Form and environment are not always discernible as such in this serigraph but in their intermingling seem to suggest more of the real nature of the universe. With no exceptions the remainder of my non-objective work represents further development in this direction. Though I repeatedly use geometric shapes in the other compositions in none of them do I limit myself solely to such shapes but invent many of my own. In the serigraph Forms in Color, in the paintings Composition #1 and Composition #6 this trend is carried to its furtherest limits. In these works the shapes are entirely personal and completely non-geometric. Composition #7 is the culmination of the work in this trend.

The two abstractions Tobacco Barn in the Moonlight and South Carolina Seacoast are the most personal expressions in the whole collection. They represent an attempt to interpret experiences and express their universal meaning. From these experiences I have drawn the essence and eliminated any semblance to that reality perceived by the senses, depicting rather the reality that is inherent in life itself. The real experience becomes a vehicle for the expression of this reality just as a spiritual experience becomes the vehicle for the same expression in the non-objective works.

In attempting to express this inner reality or essence of the universe the chief element has been space--a planned space in contrast to the arbitrary space characteristic of the Renaissance. In creating this space I have used the following elements: the shapes themselves, color, texture, and form. The most significant shapes used are those which in themselves have an expanding quality. Such shapes send out projections into space, projections which indicate direction and which are the means of creating movement on the pictorial surface. The more angular are the projections the more dynamic and forceful are the movements set up in the surrounding space. The clarity and purity of a straight line along which the eye can race in uninterrupted movement makes such lines especially effective in creating the new space. Likewise, the exciting quality that can be achieved by introducing angles and irregularities in the contour of shapes, by creating variety in length and shape of projections is extraordinarily effective.

A continuous creation of and release of energy seems to go on in these shapes; each one has a legitimate existence as an organic form. The less angular shapes used in some of my more personal statements are equally effective in expressing an expanding quality. However, they cannot expand at the rate of speed which is possible with straight lines and angular shapes and their expansion fails to take on the same forcefulness as the former. The quality of expansion is essential for interpreting the universe as I perceive it.

Color is a contributing factor in the creation of an expanding quality, for the color used on a shape can be a determining factor in directing its movement. Whether it moves outward or inward is governed by certain characteristics of chroma which produce a definite psychological reaction on the part of the observer. The use of color to produce such reactions represents its primary function in the creation of a new space. The more synthetic the color and the further removed it is in its relationships to other colors from any organic relationships the more effective it is. Only in the two abstractions have I used relationships consciously organic, for it is partly by the use of such essential relationships that the universal meaning of the experience can be made explicit. I have made a conscious attempt--an attempt influenced by my own particular psychological reactions to color--expecially in the selection of background colors, to use those which convey no suggestion of distance as perceived optically but to use colors which by their own nature convey movement and spatial qualities. It is the relation of the

background color to the colors of the shapes placed on it and the relation of the colors of these shapes to each other that creates a vibrant, living color structure.

Texture is used in much the same manner as color; its function is to contribute to the expanding quality of the shapes and to create movement in the whole composition. A textured surface can cause movement in different directions depending on the amount and kind of surface treatment used. Textures achieved by spattering and stenciling are especially effective because of the transparency which they can suggest. Scratched surfaces because of the actual creation of a third dimension on the canvas were useful in my paintings. In the serigraphs the use of transparent areas for creating textures was of especial significance.

The key element in the creation of a planned space is form. The shapes, colors, and textures would be without meaning were it not for the factor of arrangement. These elements are arranged within the space bounded by the edges of the picture plane in such a way that they have an existence of their own just as the planets have an existence of their own in the universe. Though each composition is complete in itself the introduction of fragmentary shapes suggests that neither space nor experience is limited but each has an existence beyond that which is visually perceived.

" . . . Just as any force can be manifested only through resistance to an opposite force, so spatial forces may be perceived as they meet opposing spatial forces."[1] This statement could well have been selected

---

[1] Gyorgy Kepes, Language of Vision (Chicago: P. Theobold, 1944), p. 36.

as a guiding text in my attempt to create forms for the essence of that attempt is implicit in the word tension. The purpose of tension is to bring shapes and colors into play against other shapes and colors, to bring into existence a mighty pull, to actually create conflict between shapes--a conflict which is never resolved but which exists always--and out of it all to create a magnificent unity. It is a tension which is exciting, forceful, and expressive of the dynamic quality of the universe whose various elements exist in a constant state of tension but which is characterized in its completeness by an all prevailing unity.

This is not a released tension but is a subtle kind of thing which is built on the continuous play of shape against space, of space and shape against the picture-plane. It is achieved as the result of a highly conscious organization, an organization which demands constant control, rigid self-limitation, and a high degree of intellectualization. No emotion is set free in spontaneous outburst; rather the tensions inherent in our universe are visualized and given an existence of their own.

If I have presented this as a purely intellectual problem, I have presented it falsely. The forms are very personal in that the shapes, colors, and relationships were selected and organized, not by any formulized rules, but were determined by the inner necessity which controls me as a creator. That I should favor certain shades of green and red and find them so effective for my purposes, that certain relationships should

be so pleasing to me, are factors explainable only by the inner forces which constitute my personality.

In creating tension a purposeful disbalance which makes as much use of free space as of shapes is significant in this work. Groups of shapes are allowed to exist as contrasting elements to empty areas. It is a disbalance that is not without analogy in modern society. No longer does all the space have to be filled or enclosed, but it is allowed to expand, to exist in its own right. This is a concept of space closely akin to the Chinese concept. Artists in attempting to break away from Renaissance traditions have become increasingly aware of the effectiveness of the Oriental means of describing the real nature of the universe and have adapted these means to their own purposes.

Other means whereby tension is brought into existence and thereby the new space is more completely realized seem obvious. By setting shapes at angles to the four sides of the pictorial surface conflict is brought into being. Also, by an overlapping and transparency which causes merger and loss of identity of specific shapes tension is produced. All of these means contribute to the creation of dynamic and living entities which are my interpretations of the universe.

A particular significance seems apparent in the direction which I have pursued in the work represented in this collection. The reasons why I pursued the direction begun in Color Composition and Composition #1 rather than that begun in Composition in Triangles seem not unplausible. The latter represents a level to which I had not attained before and

which I have not maintained in succeeding works. It was a level of spiritual perception which was a momentary thing--as a human being and most especially as a woman I am too much connected with the world to sustain such a level. There is too much consciousness of life, too much awareness of human fallibility, too much capacity for feeling within me for me to retreat completely from the world and the demands of the senses. It is only when all these are overcome that one attains to the highest spiritual level, a complete loss of self. Few individuals in man's history have reached such heights but it is the goal towards which we must attain less we become mere animals groveling in sensual and worldly mire. If an artist were to attain to that level his art would probably be pure mathematics for a person attaining to such a level would see the elements in his universe in their purest forms and their most sublime relationships and would naturally choose the most abstract and pure shapes by which to visualize his universe. It would be a system of mathematics which he himself would evolve, however.

There was a conscious effort in the works which continue the direction begun in Color Composition to introduce greater complexities, some of the tensions inherent in life, and to infuse the whole with the essence of life. It was a conscious return to the more meaningful use of the human element in art.

This study represents the beginning of knowing; it is a foundation on which to build. The challenge which confronts me--which confronts all artists worthy of the name--is to keep pace with and in advance

of the expanding universe. That is a challenge of unspeakable magnitude but not one impossible to realize. Inherent in the challenge lies the possibility of a future which affords no opportunity for complacency or for ease but which will be vital, exciting, and will afford, above all, the opportunity for more complete attainment towards that knowledge which all men seek, knowledge of the essentials of life and the universe, knowledge of the ultimate Reality.

BIBLIOGRAPHY

BIBLIOGRAPHY

A. BOOKS

Bunim, Miriam S., Space in Medieval Painting and the Forerunners of Perspective. New York: Columbia University Press, 1940.

Kandinsky, Wassily, On the Spiritual in Art. New York: Solom R. Guggenheim Foundation for the Museum of Non-Objective Painting, 1946.

Kepes, Gyorgy, Language of Vision. Chicago: P. Theobold, 1944.

Malraux, Andre, The Psychology of Art. 2 vols.: New York: Pantheon Books, 1949.

Miller Co. Collection of Abstract Art, Painting Towards Architecture. New York: Sloan and Pearce, 1948.

Whitehead, Alfred N., Science and the Modern World. New York: New American Library, 1949. 208 pp.

B. PERIODICAL ARTICLES

Hayakawa, S. I., "Modern Art and 20th Century Man," trans/formation, 1:2-5, 1950.

Holtzman, Harry and Martin James, "Measure of Man," trans/formation, 1:1, 1950.

Hoyle, Fred, "The Nature of the Universe," Harper's Magazine, 202, December, 1950-April, 1951.