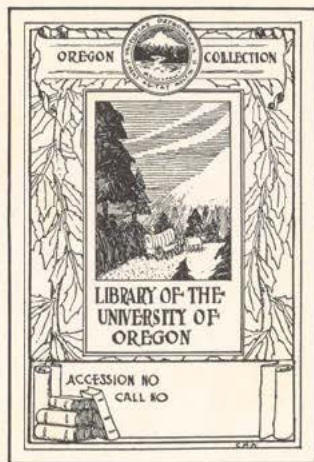




Vita

PERSONAL

I. Author: Rowena Wilkinson.

II. Birth place: Fort Wayne, Indiana.

III. Birth date: October 29, 1935.

IV. Higher Education: Lewis and Clark College, Portland, Oregon.
University of California, Berkeley, California.
Edinburgh College of Art, Edinburgh, Scotland.
Marylhurst College, Marylhurst, Oregon.
University of Oregon, Eugene, Oregon.

V. Degrees: B.S., Art Education, M.F.A., Drawing and Painting.

VI. Areas of Special Interest: Basic Design, Drawing and Painting,
Creative Writing, Education, Cinema.

VII. Relevant Professional Experiences:

Mural Commissions: Westminster Presbyterian Church, Portland.
Ye Old Town Crier Restaurant, Portland.
Hydes Restaurant, Milwaukie, Oregon.

Exhibitions: Edinburgh, Scotland-1957.

London, England-1958.

Ruth Saxon's Mosaics, New York-1959.

Marylhurst College, Marylhurst, Oregon-1959.

Teaching: Elementary Painting, University of Oregon-1960-61.

THE IDEOGRAPH, THE FOURTH OF FOUR IMAGE MODES.⁸

MIRROR:



MOSAIC:



WOVEN:



IDEOGRAPHIC:



⁸ Professor Jack Wilkinson, Image and Surface, unpublished manuscript, 1955

UNIVERSITY OF OREGON LIBRARY
EUGENE, OREGON

The following project was made possible by the inspiration of
ideas of Jack Wilkinson, Architecture and Allied Arts; interest and
visual continuity information of Dave Foster, Architecture and Allied
Arts; Camera Tower by Bryan Ryan, Architecture and Allied Arts;
camera and "corner" studio loan by Burnie Freemesser, Photo Lab; en-
couragement, sound equipment and magnetic sound striping by Don Hunter,
Audial Visual; and recording of harmonic and voice by John
Hendrickson.

THE IDEOGRAPH, THE FOURTH OF FOUR IMAGES MODES

by

ROWENA WILKINSON

A TERMINAL PROJECT

presented to the School of Architecture and Allied Arts
and the Graduate School of the University of Oregon
in partial fulfillment
of the requirements for the degree of
Master of Fine Arts

TABLE OF CONTENTS

THE PROGRAM, THE FORMS OF MAN, IMAGE, MUSE

	Page
PART I. THE NATURE OF THE PROGRAM	1
PART II. THE PROGRAM OF VARIOUS METAPHORS	5
A. Metaphor: The Idea	8
"How are things originated in nature?"	
B. Agency: Approved [redacted] [redacted]	11
[redacted] (Advisor) of the geo- metric parts.	11
C. Bound. (The word and musical "figure" being greater than the end of the sound parts.)	20
D. Audial-Visual Continuity (The moving stillness and the still movements.)	28
E. Mind the Definer (Folding the finite and making sense.)	29
F. Process: Film-Making	36
1. Geometric Ideas and Working Drawings	36
2. Working Types	38
3. Simultaneous Visualization	38
4. Camera Recording	40
G. Representation: Is Metaphor an Image of Nature?	42

TABLE OF CONTENTS

THE IDEOGRAPH, THE FOURTH OF FOUR IMAGE MODES

	<u>Page</u>
PART I. THE NATURE OF THE IDEOGRAPH	1
PART II. THE IDEOGRAPH OF NATURE: METAMORPHOSIS	5
A. Genesis: The Idea	8
"How are things originated in nature?"	
B. Agency: Anatomy = Autonomy	11
1. Image. (The associated image being greater than the sum of the geometric parts.)	11
2. Sound. (The word and musical "figure" being greater than the sum of the sound parts.)	20
3. Audial-Visual Continuity (The moving stillness and the still movements.)	26
4. Mind the Definer (Finding the finite and making sense.)	29
C. Process: Film-Making	34
1. Geometric Units and Working Drawings	34
2. Working Tapes	38
3. Continuity Visualization	38
4. Camera Recording	40
D. Expression: Is Metamorphosis an Ideograph of nature?	42

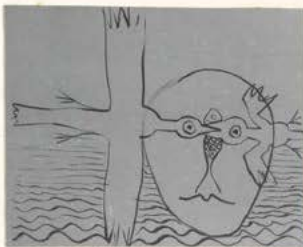
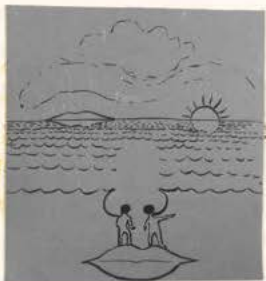
PART I: THE NATURE OF THE IDEOGRAPH

Sometimes the products of man's mind which are most obvious and direct in meaning escape us. Our logical classifications filed in our heads from the scholastic tradition sometimes become embalmed there forever. The ideograph, which is a term taken from the Chinese written character, is itself a prototype of nature. When the Chinese makes the sign  he is drawing a clear and

concrete image of a rice field. Through associations, this picture comes to mean germination, beginning, cause, origin. If then it is drawn  the meaning is quickly

inferred from the ideograph because it reinforces what we have already seen in nature: sprouts from the rice field, meaning vegetation. When observing nature we can see that it is but a process, but the processes of each identity grow and develop at different rates. The most obvious characteristic about it is that all things develop (grow or decay, come together or spart, freeze or melt, etc.) in sequence. Is it not clear then, that the reconstruction of our observations in thought and imagination, develop in sequence also? But the sequence is known not only through  (Chinese ideograph for tones in music, sometimes spinal vertebrae, meaning succession), but in the associative inference

from the combination of two pictures which have something in common. In such a case, the meaning is derived from the putting together of two or more separate meanings. Such a meaning happens in thought, and is always more than the sum of the parts. Thus a picture of a female breast and a tree gives the meaning: plum.* The meanings the mind produces from the observations of nature are never literally the stimulus to the observation...for a tree and a female breast will never produce a plum no matter how hard they try. But the operations of the mind and the operations of nature are identical in their successive nature. The difference in the nature of the mind in putting together observations from nature which do not occur in nature but are suggested by it, and natural processes is in the IDEA. The idea is nature's most efficient means of putting nature together. For it is the comprehensive linkage of nature through ideas, and in turn from idea to material ordering of nature, which seems to be the natural succession



* The Chinese Written Character, by Ernest Fenollosa, Square # Series.

PART I: THE NATURE OF THE IDEOGRAPH

of nature's purpose. Nature has produced a hand for man. The concrete picture of hands linked to hands begins the operations of our imagination. If it is the idea  communication we come up with, then hands which are pictured opposed to one another  communicate the idea of fraud, inverted communication.

The graphic means of the idea, as opposed to the auditory, has characteristics which are most continuous with the nature of the idea itself. As we have seen, the idea is never itself the concrete stimulus in nature from which it originates, but is a process in the mind which fixes itself as an image. Such an image, fixed in the mental life of an observer, is still; although the operations to arrive at this fix, are successive. Such still images may, in turn, recombine with other images and produce still other images in the mind which are more than the sum of the parts. Such also is the nature of the graphic or visual media. The eye sees what it sees all at once rather than in succession. Although crowds may move before our eyes, we are still getting the total image all at once and the individuals within the crowd are always moving in relation to the whole image. In motion picture, each single frame is perceived in turn, and each one all at once, even though each is successive to each. We can look at paintings and photographs for considerable periods without anything happening, materially, within the format of the picture, for all the succession is happening between the play of the eye and the mind. But we cannot listen to one sound tone for considerable

periods, for the mind demands more "figures" or sound images to work with. It is thus the nature of sound to be in variable succession, but it is the nature of the image to be constantly still and perceived all at once. Thus the eye is quicker than the ear, for the eye sees instantly everything within its range and is ready for change; while the ear hears gradually through change itself.

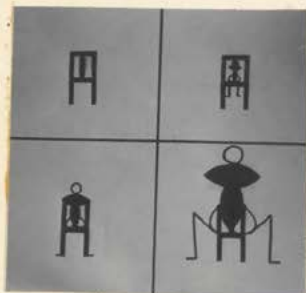
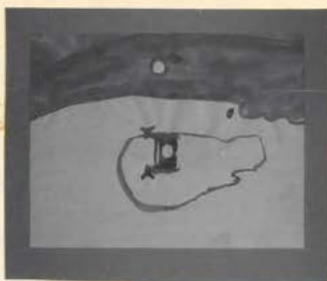
It is the nature of the ideograph, then, to be least successive, but to be most demanding on the successiveness of the processes of thought and imagination. It is by such contradictions that nature accomplishes the most meaning for the least expenditure of work in its means.

If nature is viewed as many convergences of discreet packets of energy, then clearly it is all process. But nature in endless flux is nature not observed at all. Therefore the mind and the eye work together to form packets of energy which fix in images the most critical convergencies of natural processes. Each object we call an apple, rock, tree, bacteria, cell, candle and other known nouns are such convergences. But since nouns do not exist except as idea we can see why scholastic logic which deals in the relationships between nouns and nouns instead of nouns and nature, traps itself in the words TO BE. Since energy parting and combining in packets is never always anything, to say "this IS that" is to deny the order of natural succession. The only difference I can discern between what are called scientists and what are called artists is that the former concern themselves with the observation of natural succession on a more particular level, while the latter is concerned with such observations of how the particulars can be put together, thus on an

associative level.

It is the nature of the ideograph, at whatever level of reassociation, to always be comprehensive and whole no matter how many parts have been metaphorically woven into it. It is the manifolds of associations which make it work as natural succession in the mind, giving a more comprehensive picture of nature's operations. In nature one action sets off another. The rolling of the earth and sun causes heat in one place and not in another. This heat and cold meeting causes winds. The winds in turn cause condensation of water into clouds. The clouds moving over the surface of the earth reach a warm pocket of air and release rain. The rain on the earth begins many processes: erosion, plants springing up from seeds, pools for fishes, etc. In idea also, one image or slice of observation from nature sets off another. Image builds from image. It is the ability of the mind to hold together many separate images which makes possible comprehension of nature. The processes of nature are so complex and diverse that all the books and classification systems and I.B.M. machines in the world could not take care of them individually. And if they could, it would be of little use to us. The ear cannot sustain information. Sound is fugitive. It is dominately the play of the eye and the mind which sustains an image long enough to reassociate it into a tighter, more useful packet of energy.

Is it strange, then, that the ideograph is nature's means, through the mind, of seeing the complexity of natural processes simply?



PART II: THE IDEOGRAPH OF NATURE: METAMORPHOSIS

Introduction

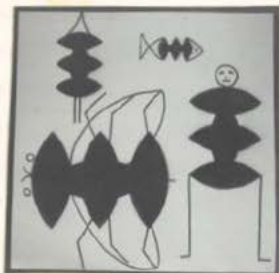
In order to present the processes of nature in a way most natural to itself, I have used animation in motion picture. By such means the eye is given information a single frame at a time, building the natural succession or a still image on canvas, the ideograph remains. It is antithetical to the autograph which, in the still-image, the "abstract-expressionism" of Jackson Pollock, and in the motion-picture Norman McClaren's films are examples. The point is not whether one uses graphic means or photographic means, but whether the origin of the work is in IDEA (image of nature) or in AUTO (self-expression).

Although the still-image ideograph is perhaps more efficient than a succession of still frames in motion picture, the control of the observer's attention is not as acute. In motion picture, the play between the eye and the mind is instantaneous, as if one were the window of the room of the other. But the natural succession of suns and moons and creatures on the screen is not literally these processes at all. The film is all about what it is not. If we are only aware of celluloid and light after seeing a motion picture then we can only say, what a failure of the media! It is this contradiction between what the film is about and what it literally is that makes it a particularly useful media for ideographic communication.

Although sound is more fugitive than the visual image, it carries information through the word and reinforces by its own nature, the order

of nature's processes. The sequence of beginnings and endings of words, stopping and starting, sounds and silences is itself a language which communicates to us about itself. But this is not the meaning of the words. The meaning of the word is still in the image it evokes in our mind, which is not the print on the page or the sound in the air. The meaning is the metaphor which has no reality in nature except as Idea. Through the inclusion of the word spoken, the ideographic nature of the film is compounded. Even sound, which has no convention of specific association like the word sounds, communicates meaning. The slam of a door...someone coming in or out. A roar of a motor...a car starting. Pit pats on the roof...rain. Slight wind behind you...someone breathing, etc. In music, sounds are organized, sometimes with natural associations such as birds singing, the thump thump of a walking elephant, swish-swash of windshield wipers; but such associations are secondary to the structure of sound. This structure of high against low, long against short, loud against soft has such import that the mind, in order to retain it, must construct images, sometimes called musical "figures" or "motifs". Through the mind, sounds become ideas also. Although all aspects of the film have their origin in idea, the image, the spoken word, and the music all have distinct characteristics as sensorial media. Such is true of the music particularly, since it is performed on the harmonica, an instrument which sounds like many others. Since it is woven together, mechanically, with the change in tempo of tapes, it is the media used to speak most far and about itself. It is lacking in associative meanings to provide a counterpart to the highly associative nature of the images and words. Thus it speaks most about natural succession itself since that is the nature of its own process.

In the following discussion about the film: METAMORPHOSIS, we will examine the problem of materialization and realization of the IDEA. Only in observation of the film itself will we find, whether through these means, this ideograph is of nature.



A. Genesis: The Idea

How are things originated in nature? In asking questions about causes again and again, the initial beginning emerges as the first why. In our observations of beginnings: seeds, eggs, stars, atoms we notice each has a potential energy to become more than it is in its original state. The direction of this energy is from within itself to the outside. All these beginnings have the potential energy in common, but each is finite within itself. Therefore the noun: seed, is energy which is in the process of emitting itself from this particular packet. Therefore it is seeding (verb) rather than seed. Yet there is a completion to the seeding phase, when it is no longer seeding, but is sprouting or flowering or growing fruit. It is this completion which enables us to fix the image in our minds of seed, plant, flower. We also observe that seeding is distinct from the hatching of an egg or the radiating of a star. In fact the outgrowth of the seed and the outgrowth of the egg are complementary in supplying one another carbon dioxide and oxygen, color coding in the red of blood and the green of photosynthesis. Each has a finite duration and extent (how many inches per year does it grow or how many feet per second?) and the order and magnitude of this finitude gives it its recognizable characteristics that we call nouns; seed and egg, Plant and animal. Otherwise we can only say generally, all is energy! Only energy has infinite duration and extent which is to say nothing at all. And yet it is perhaps the complementarity of the infinite duration and extent of energy in full potential of direction, and the packets of "things" of finite duration and extent which is the largest totality:

PLACE: UNIVERSE: TIME: ALWAYS. But why talk about that? But it is always there. It is the finite completed cycles which make the identity (noun), making possible associations and understanding. It is interesting then, that these images of recognition printed on the mind are the very things which in nature are transient. Consequently in the film, METAMORPHOSIS, I deal with the ideas of beginnings again and again, but each unfolds in a distinct pattern when evolving chronologically; but when the star changes to the eye, the sun to a flower, and the flower to a butterfly the change is made, metaphorically, in the mind.

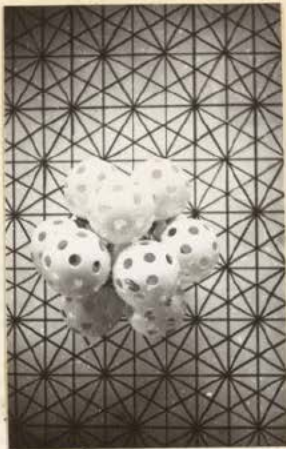
Therefore the film is not a study of evolution, or even of cyclic process (although this is used to show the completed action of transient things, converging into another magnitude), but is an ideograph of a world-view. The problem is to understand the precise equilibrium of the finite and the infinite, of the cyclic and the complementary, of the transient and the still. The prime question is the largest totality which must be the origin of all the others which are dependent on it. Within cycles of events there is a pattern of wholeness which recurs on different levels again and again. It is the find of this wholeness or totality within and without the transience which makes possible the reliability of this world-view.

The first question for the beginning of the film, then was: What is the movement from a potential energy everywhere always to a finite event with a size and position? I visualized energy emitting every instant every place in the universe. To do this I had to think in more tangible terms than such a question suggests. I imagined the energy emitting from centers in paths, but everywhere being interfered with by

every other energy path. Solidified, this image is the closest-packing of spheres. The sphere is the structure which is least differentiated since every point on the periphery is equi-distant from each center. It is likely that I could only have re-arrived at this picture of the question because it is the basis of Buckminster Fuller's energetic-synergetic geometry, and Jim Lehman, through the teaching of Jack Wilkinson was also working with similar concepts, since we were all asking the same question in different ways. Each sphere is visualized as a model of a field of energy whose vectors are the same in length and angular relationships. Fuller's name for this structure is the VECTOR EQUILIBRIUM because the radial vectors are equalized by the circumferential vectors.

After visualizing the close-packing of spheres as a beginning, I again tried the question of movement from a potential energy everywhere always to a finite event with size and position. There is a complementarity of outward radial thrust and restraining chordal force in the close-packing of spheres which suggests the complementarity of the question I was asking. I could only imagine, from this model, that there is no movement from a potential energy to a single event since the constancy of energy is complementary to the transience of finite events. Thus one is known only because of the other. The largest totality is dual as well as each particle having the dual inside and outside. Thus we know of seeds and eggs only because of the constancy of energy potentiated in each.

This thought enabled me to get on with my work.



CLOSEST-PACKING
OF SPHERES.
VIEW I.



CLOSEST-PACKING
OF SPHERES.
VIEW II.

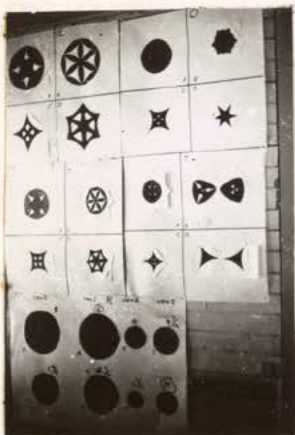


PARTIAL VIEW OF MAPS AND COMBINATIONS
OF UNITS.

B. Agency: Anatomy = Autonomy?

1. Image

After getting thirteen plastic balls and packing them, I began to have something I could hold on to! I then proceeded to draw maps of the closest-packing of spheres. The beginning of the film is based on the premise that nature in maximum uniform equilibrium is a continuous packing of spheres where every vertice is the center of the universe. Within the vector equilibrium as a single concentric layer, the regular polygons are found: the tetrahedron (four spheres packed), octahedron (six spheres), cube (eight spheres). Although the icosahedron with 20 rhomboid faces is the fourth regular polygon which is a phase of the vector equilibrium, it is not found when spheres are precisely close-packed. I use these four primary polyhedra as the model units for reconstructing this idea of the differences and continuity of things in nature.



VECTOR	EQUILIBRIUM	OCTAHEDRON
View II. Convex	View I.	View II. View I.
Concave		
CUBE		TETRAHEDRON
Convex		
Concave		
MAGNITUDE OF CIRCLES:		
A	A	E D
C	B	F E

ONE IS ALONE.



TWO IS TANGENCY OF ANY TWO.



THREE IS TANGENCY OF ANY THREE.



FOUR IS B AROUND F.



FIVE IS C AROUND E OR A AROUND C.



SIX IS CLOSE-PACKING OF SAME SIZE.



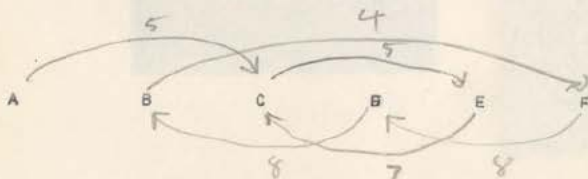
SEVEN IS E AROUND C.



EIGHT IS F AROUND D OR D AROUND B.



We can see the pattern:



Note the odd numbers coming out of the convergences of the even and vice versa.

VECTOR EQUILIBRIUM

CLOSE-PACKING OF EQUAL SPHERES
ONE SPHERE.

THIS VECTOR EQUILIBRIUM REPRESENTS A VECTOR EQUILIBRIUM OF 13 SPHERES OF
EQUAL RADIUS (1 UNIT) IN A VECTOR EQUILIBRIUM.

Diagram 1 (a) (13)

VIEW I.

CENTRAL +
PERIPHERAL
LAYERS.

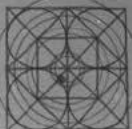


VECTOR EQUILIBRIUM

VIEW II.

FRAMES

OCTAHEDRON OR CUBE



13. CENTRAL + PERIPHERAL
LAYER.

PERIPHERAL LAYER

VECTOR EQUILIBRIUM

VIEW I.



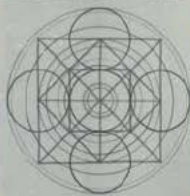
PERIPHERAL LAYER



CENTRAL LAYER

VECTOR EQUILIBRIUM

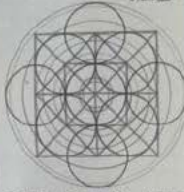
VIEW II.



CENTRAL LAYER

VECTOR EQUILIBRIUM

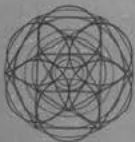
VIEW II.



CENTRAL + PERIPHERAL LAYERS

VECTOR EQUILIBRIUM

VIEW I.

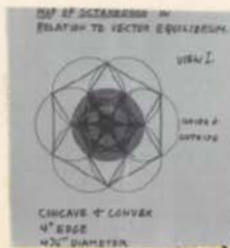
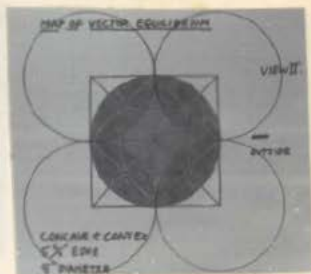
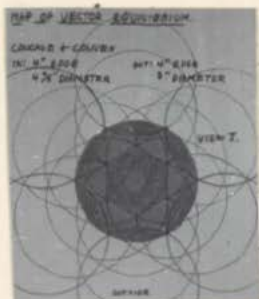
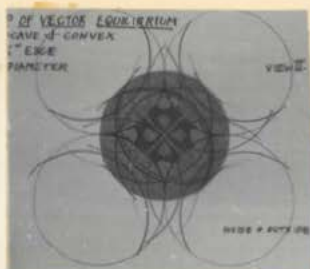


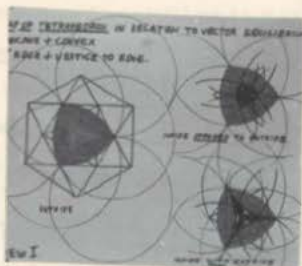
TWO PERIPHERAL LAYERS OPPOSED.

2 VECTOR EQUILIBRIUMS AT MAX OPPOSITION.

VIEW II.







As we can see from the maps of the vector equilibrium, there are two distinct views. In View I., the spheres packed in concentric layers we would see the progression of one, six, twelve, eighteen, twenty-four, thirty, etc. In View II., we would see the progression from the four vertex square to eight, twelve, sixteen, twenty, twenty-four, etc.

When adding both views' progression together we get the arithmetic progression of tens:

4	8	12	16	20
6	12	18	24	30
10	20	30	40	50

Since there are four positions to view each vector equilibrium showing the hexagonal view and six positions to view each showing the square view, I multiplied the number of positions times the concentric layer progression of each view and found the following reciprocal relationships:

4	8	12	16	20
6	6	6	6	6
24	48	72	96	120

6	12	18	24	30
4	4	4	4	4
24	48	72	96	120

Add these together and you get 48, 96, 144, 192, 240, the arithmetic progression with 48 between each number.

But since each position from viewing includes some spheres and excludes others, and many are counted twice, the progression for the closest-packing of spheres is 12 (first layer), 42 (second layer) 92 (third) 146 (fourth), 238 (fifth).

There is no place for further involvement in the numerical properties of this modul here. Let it suffice that in the two-dimensional lattice there are but two units which are but two units which are discreet differences of kind, and these are the square and the equilateral triangle. All other lattices are combinations, although this does not seem to be stated

in books dealing with crystallography where as many as eleven is stated as the minimum.

From the maps included here you can observe how the concave and the convex units result from the circles. It might be said that energy emits only in straight paths and that curves do not exist in nature; but I am taking circles as the vertices or points of energy emission itself. On the molar level, such curves can be visualized as the gradual sequence of straight energy paths in angular direction, just as the spiral of a snail shell is made of a progression of straight units.

Since my problem is to construct thought processes and not to build tangible structures in nature, I could use this geometric modul to serve as a means to the idea of unfolding from the original radial and circumferential energy diverging and converging, the mani-folds of creatures we recognize.

Using the visual aspect to this modul I tested all the possibilities of relating one unit to another:

INSIDE OUTSIDE

CONCAVE CONVEX

View I.:

Outside concave to concave.....	6
Outside convex to convex.....	6
Inside concave to concave.....	6
Inside convex to convex.....	6
Inside concave and convex.....	16
Outside concave and convex.....	16
Outside convex and inside concave.....	12
Inside convex and outside concave.....	12
Outside and inside convex.....	16
Outside and inside concave.....	16
TOTAL	<u>112</u>

View II.:

Outside concave to concave.....	4
Outside convex to convex.....	4
Inside concave to concave.....	6
Inside convex to convex.....	6
Inside concave and convex.....	9
Outside concave and convex.....	9
Outside convex and inside concave.....	12
Inside convex and outside concave.....	12
Outside and inside convex.....	12
Outside and inside concave.....	12
TOTAL	86
	112
TOTAL OF BOTH VIEWS.....	198

As might be imagined, beginning from the simple idea of the close-packing of spheres resulted in complexity very quickly. The understanding of the combinations depends on the order of the units into simply integrated compounds. The compounds are made up of units which vary from one another, and specific visual games could be played with each one. Doesn't this correspond with what is happening in natural process: atoms building into molecules, molecules into crystals and metabolised crystals (chromosomes) and these in turn into cells and tissues and total organisms? As organisms become more complex in their parts, the greater the need for a central coordinator: nervous system. Through this coordinator, more possibilities of natural succession are opened up to the organism. On the atomic and molecular and crystal level, the structure is more determined by the potential energy and less determined within the structure itself. The chromosome, opposed to the crystal, has varied groups of atoms*. This increases its degrees of freedom. Chromosomes are metabolising

* Problems of Life. An Evaluation of Modern Biological and Scientific Thought, by Ludwig Von Bertalanffy.

crystals as are viruses, but to synthesize organic molecules, enzymes are required. At this stage the cell (nucleus and cytoplasm) is unfolded, the simplest unit capable of autonomous life. Through the parting and combining of cells follows the complex organism with extremely differentiated parts coordinated by the central nervous system. We can observe that the pattern of each level of structures unfolding in nature takes place in discontinuous quantitative jumps, and yet there is continuity in the transitions. The creatures between the reptiles and the birds for instance were apparently only necessary under the environmental conditions, to serve as transits from the warm-blooded creature sprawling on earth to the creature of the sky. It seems that evolution occurs in the pattern it does because of the interaction of the coded genetic system from its hereditary history and the conditions of the environment. At each stage, mutations are potent, but one characteristic among many possibilities is selected for going on in certain environments.

I am getting rather far from the specific problem of the film, and yet the natural succession of nature is my only observation point. In the modular units I am using for presentation of these ideas, the magnitude of the circles found within each view of each vector equilibrium is the key to the total regenerative cycle. I have coded them as follows:

- A. Outside of vector equilibrium (both views).
- B. Inside of vector equilibrium (view I.).
- C. Inside of vector equilibrium (view II.); and the cube or octahedron of (view II.).
- D. Outside of cube or octahedron or tetrahedron (view I.).
- E. Outside of tetrahedron (view II.).
- F. Inside of tetrahedron (view I. or II.).

In observations about the operational patterns in nature, there are sequential repeats which are the basis of ordering for recurring patterns in the film.

I. Beginning with energy emission, the configuration of the radial  is the initial pattern. Since this is not easily sustained in natural growth patterns without another quantified interference structure, I do not have any photographs. Even the star has mass, but is perhaps closest to pure radiation. The direction of growth of a tree trunk, if we take a slice of it: is from the center to the periphery. Consequently, crossing the growth rings is the radial growth direction.



II. As we have observed in the close-packing of spheres, when energy is interfered with by other convergences of energy, either a branching or a packing results,  depending on whether the energy path is split or holds together on all sides. In either case, the configuration is hexagonal if the energy and interference converges at equal points from equal directions with equal velocities. Even mud cracks, if the surface is equally thick in all places and the heat penetrates equally, would crack in hexagons, theoretically.

III. If the energy and interference is not equal, then there is a loss of equilibrium from centers to peripheries which are in turn,  centers to peripheries. The spiral results then, depending on the ratio of energy and interference to energy. Geometric progressions are proportions resulting from such ratios.

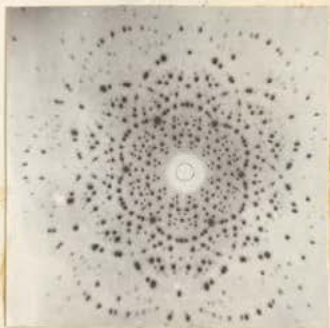
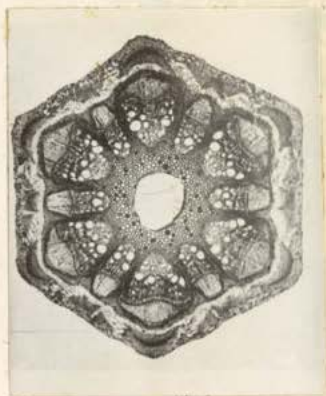
IV. The fourth configuration is the completed cycle of all of these, and therefore may be imaged as a circle.  Yet it is the understanding of any of the preceding configurations having arrived at their finite wholeness.

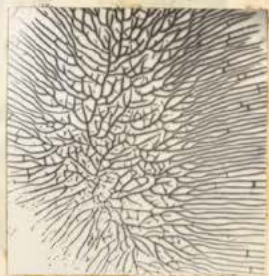
In the following pages are examples of growth patterns from the II. and III. of the above set, since these are the two in which nature materializes herself most completely.

In the first part of the film, the idea of building up from radial emission and circumferential chording generates into the relationship of these circles to each other. From then on the geometric model is used in contradiction to its own natural succession by the use of the associative image. The four is found in the spiralling of galaxies, the five in the flower and star-fish, the six in the turtle's back, eggs, branching of plants, etc. From this, we can observe how the imagery contradicts the means by being something more than the sum of all the geometric parts. Yet the means is a model of natural succession which configures into different "things" just as the imagery is. In this way the idea of regeneration in nature is transferred to a modular means, and this means, being a natural event, is used to present the original idea.

Each number configures, visually, in a character which is recognized by the eye instantaneously. It is then reassociated with specific "things": hexagon in egg clusters, star-radiation, back of turtle, etc. The nature of the image is a simple figure-field relationship. The figure moves within an environment coded in four colors and black and white, in conformance with the color theory, based on "light through darkness" and "darkness through light".*

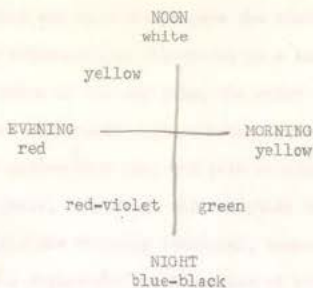
*COLOR THEORY, Professor Jack Wilkinson.



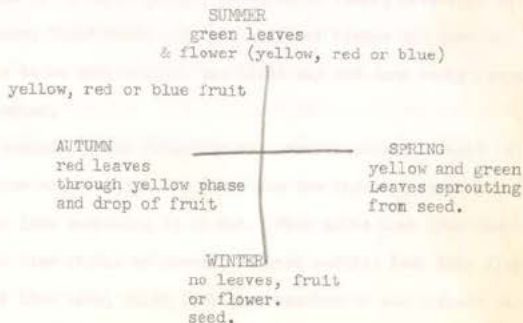




The color coding corresponds to the color cycles in nature:



PLANTS: (general color-coding)



Animals are much more diverse in their coding, but the egg yolk is always yellow like the sun; and blood, through oxidation, becomes red. Of the surface coverings of animals, skin, scales, feathers, hair, the feathers are most diverse in coloring. Yet the scales of fishes are

often multi-colored, by their very neutrality. Perhaps the development from reptiles to birds (scales to feathers) accounts for the similarity of their color. Skin and hair always have the characteristic of blood and its associated color-yellow. Since red is a second phase of yellow, as the blood is a phase of the egg yolk, the color of skin is a consequence of this, the skin itself perhaps being neutral. It does not seem to be permitted in nature that hair and skin be blue or green.

Through the image, camouflage and deception become easily employed. When figure and field are visually identical, camouflage results. We only know there is a figure and field because of a shift of one or the other to another field or figure. In the film I use a red deer against a red field and a green lizard against a green field. In nature, speckled eggs in speckled ground, bitterns in reeds, frog-fish patterned like sea-weeds, light below and dark above of fishes and deer and other land animals to be seen against the light sky and dark earth respectively, are all examples.

Both camouflage and deception are contradictions of what is expected by association and what is. In deception the figure is seen clearly enough, but it looks like something it is not. When moths look like leaves, caterpillars look like sticks or leaves, African mantids look like flowers, spiders look like ants, flies look like beetles we can suspect deception. In the film, when the tree branches become the antlers of a deer, when the flower takes off from its stem like a butterfly, when a reed flies into the sky and lands safely on two feet we observe that deception is a large participant in the ideographic nature of the film. That visual events are illusory makes possible the most natural presentation of the ideograph.

2. Sound:

In music and motion picture, the paths of motion are changing positions; in the structure of architecture, the observer is changing positions, in the still-image we see all positions simultaneously. Consequently, the sound and the motion picture is a mnemonic recollection of the change of positions in sequence.

I am primarily interested in perceptible ideas and not mathematical subtleties, therefore I have used the total set of discreet ways of processing: isolating, parting, combining, and contradicting⁸ as a model in the musical process. Thus it is possible to order a musical idea in four ways analogously: SIMPLE "MOTIF" IN ONE VOICE, ONE VOICE REPEATING ANOTHER, ONE VOICE OVERLAPPING THE OTHER, COUNTERPOINT.

The musical idea itself structures from the properties of sound, which in turn are a consequence of the frequency of one "thing" beating against another. PITCH, DURATION, DYNAMIS, AND TIMBRE can be ordered separate from one another, in analogous relationships also: PARALLEL, ALTERNATE, OVERLAPPING COUNTERED to each other. Thus a "motif" may be of one pitch (high or low), one duration (long or short), one dynamic (loud or soft), and of one timbre (total overtone quality), but it will no doubt be highly monotonous. Nevertheless, this Zero phase of musical potential is worth considering as a ground on which to modulate. The "motif" may be of high pitch and low pitch in alternation, of high pitch and slow duration in alternation, of high pitch and soft dynamics in alternation, of each of the sound properties in turn alternating, overlapping, countering. The most complex and regenerative order is

⁸The "Orientation"...Professor Jack Wilkinson

inverting pitch with pitch, duration with duration, etc. In this way, each part is reinforcing the other by opposition or contrast. We can imagine, without going into detail, how every order, whether a simple inversion or a compound of alternation and inversion, etc., is an offshoot of the primordial structure of the total set.

Music is a vehicle of ideas literally made up of tensions and compressions. Whether it is the vocal cords in the larynx, a string stretched and hit with a finger, a hammer or a stick and whether the string is linear or stretched in a field, made of cat-gut, steel or skin, it is still the tension and compression playing one against the other which makes sound possible. On an associative level, musicians speak of the tension points and relaxation points in a musical composition. It is the ordering of tensions and compressions of a tactile instrument (blowing air molecules through a tube, hitting with rubber and metal hammers, pulling and releasing with fingers and banging two compressed vehicles together) that makes possible frequency vibrations to set the ear drum vibrating, and the mind associating tiny points of tension with points of release. In counterpoint, the composition flows from two or more linear musical ideas in opposition. Thus the tension towards a point of climax of one is posited against the release point of the other.

Like the winding and unwinding of a clock spring, tension and release regenerate from one another in cycles which in turn are part of a larger cycle of tension and release. The build up of energy may be from fast to slow or slow to fast, from low pitch to high pitch or high to low, depending on the position in the total order. But when zero phase potential is considered silence rather than a complex of frequencies, the

associative tension and release points work in a direction which is literally in accordance with the tactile behaviour of the instruments. When the direction is towards tension, the tactile behaviour is towards high pitch (tenser string, therefore greater frequency) and shorter duration of each frequency, and louder dynamics through vehicles of high tensile strength producing a complex of overtones. If, however, the high pitch, short interval, loud dynamics and complex of overtones are sustained, the ear and mind will accept this as the sound "field" while the silences figuratively puncture it. Each direction can be viewed as a build up of potential and a realization of potential.

Working from these anatomical origins of sound, I began to select out simple musical ideas from the possibilities. First I worked on the simple idea of the total set of groupings of two complementary double

units:	XXOO	OOXX
	XXOX	OXOX
	XXOX	OXOX

Thus the X could stand for the high while the O for the low, or vice versa, the X for long and the O for short, etc.

All six possibilities literally may be considered: OOXOXOXOX, each group overlapping the others. This was a beginning, but only when inverted or played in double or triple "voices" was the attention sustained. The chord can be viewed as a compressed horizontal "motif" stood vertically. (Horizontal being duration; vertical being simultaneity). The point against point of counterpoint can work with any of the four components of sound, but is most perceptible in pitch and duration. With double voice the possibility of grouping is:

1	2	or:
2	1	

	XOXO						
IXOO	XOXO	XOOX	XXOO	XOXO	XOXO	XOXO	XOOX
OXXO	OXXO	OXXO	XOXO	OXXO	XOXO	OXXO	XXOO
IXOX	OXXO	OXXO	XXOO	XXOO	XOXO	OXXO	
OXXO	OXXO	OXXO	XOXO	OXXO	OXXO	OXXO	

With three voices, there is the possibility of:

112233
231312
323121

With four voices:

111111222222333333444444
234243431113442211323211
32342434342121144211323
442332114334121424132132

Beyond four voices, the perceptibility becomes ridiculously impossible.

There are other "horizontal" (duration) orders within three and four voices, but the "vertical" contra-puntal chord is exhausted in this diagram. This is but another example of the simple unit moving to the complex very quickly, but it tells us nothing of how to select from the possibilities.

Let's examine some of the "motifs" I have constructed in the film, even though the musical composition aspect of the film is yet in primitive stages. I used visual analogies. If we look at a radial configuration, it is obvious that many lines are diverging or converging towards or from a center. In sound, a similar structure is an ascending and descending scale from a central tone. I have used this "motif", often by accentuating the central tone by repeating it between each ascending or descending interval. Thus with 1 as the central tone, we might use: 1-2-1-3-1-4-1-5-1-6-1-7-1-8-1 or the inverse.

The second visual structure to consider as analogue is the parted or branching line, which, in terms of field, is the convergence of parted

fields...both resulting in the hexagonal unit. In this case the line parting never return to the original center but always branch off from each stem in turn. In sound, this might result in a series of intervals which deviate from a constantly shifting center. Nevertheless, the centers are recognized as centers, or as instants which begin a new series or branch. Using the idea of simple steps up and down the scale, shifting the center of the central tone is the obvious result. Thus, there are four possibilities: 1. steps running up, running down; 2. steps running down, running up; 3. steps running up, running up; 4. steps running down, running down. The steps may be (on the harmonica): blow-suck alternation; ascending and descending blow or suck; chromatic suck and/or blow; chromatic and harmonic such and/or blow, etc. No matter how many small prolongations are woven into and around the dominant tones, the structural anatomy is simple.

In the patterns of nature's order, the spiral is a visual configuration which results from kinetic growth or movement ascending or descending in a geometric progression, by having double forces from within and without. Thus, the nebulae has a central radial thrust, but it is being counter-buted by a force which is not directly circumferential or the whole configuration sound inside-out or close-pack, but is at an oblique angle to the radial thrust. Thus, also the snail grows out, but in a direction which is not radiating equally from all sides, as in the star-fish and the "sand-dollars" and many other sea animals which grow suspended in their water environment. The snail has the crust of the earth and the more loosely-packed molecular structure of air to thrust its energies against. Anyway, the direction of the spiral's growth is towards greater or lesser freedom of movement, depending on whether it is moving from large to small or small to large. In sound, it may be from

fast to slow or slow to fast, or from intervals of extreme pitches to intervals of close pitches. Thus coded: 8-1, 7-2, 6-3, 5-4 or vice versa.

The fourth configuration, I most closely associate with the completed cycle, therefore it is the completion of any of the preceding structures which are beginning (radial), branching or packing, and spiralling on and on. The beginning and ending (completed cycle) have a completion, but the branching and spiralling can go on ad infinitum, until brought to completion by having similar recognizable characteristics to the beginning. In musical terms, the tonic is thought of as being the "home" tone, the point of departure and return.

These are but the simplest anatomical features of the ways of structuring sound. From these "motifs" or phrases, sound structures or another magnitude may be built which alternate, overlap or counterpoint as stated in preceding paragraphs.

3. Audial-Visual Continuity

Does the eye see movement? If we saw a strip of film sliding in front of a projector without sprockets, only bands of light and dark would be discernible in the direction the film is running. The design of both the motion picture camera and projector enables the eye to see each image in stillness, while the movement from image to image is obscured by the shutter. If we swing our heads around and around very rapidly, no images of objects are discernable, but only a streak of separate colors continuous with the color of the objects. The streaks are discernible, only because the axis of the head swirling around is constant, the streaks being in the direction of the swing. When we see the red of someone's coat move in a crowd of blue and grey coats, the eye has a continuous stream of still images recording on the retina. The movement of the red coat is a change of position of each of the still images.

Again we deal with the complementarity of the still and the moving. The still, in every instance, is but a perception of WHOLENESS. Each stimulus from nature is finitely found in the mind through the "outer" senses. Each sense has a different duration of intake in accordance with the duration of the stimulus. Thus the speed of light (approximately 186,000 miles per second) enables the perception of the eye to be much more instantaneous than the speed of sound (11,000 feet per sec.) by the ear. Consequently, when we hear changes of sound, we literally hear the changes from high to low or from loud to soft, etc.; but when we see changes of light and dark, it is not the changes we see but the continuity of still images. Thus, in music we hear the change from F sharp to C to E flat, in

motion pictures, we don't see the change, but the still images in succession. Is it surprising then, that motion pictures seem more continuous in their movement than sound? The sound is heard in discontinuous changes of discernible notes, but the images are seen in continuous changes of still images.

In building up an animation picture, the nature of the still and the moving is foremost in mind. Each sequence, from seed unfolding to stem and leaves to flowering and fruit, is made up of discontinuous images of the plant in stages of growth. Calculating how long it is imagined to take to perceive the plant growing in seconds, the number of still images will be divided into it. Thus, at 24 frames per second, and the plant growth in two seconds with eight stages, six frames of each stage will be taken if each one of the stages is equal.

By the nature of the motion picture being composed of the complementarity of still images in succession, it is possible to construct visual events which are associated with tangible objects. But it is possible to move the tangible object, for example a bird, in such a path and with such speed that the object is not discernible, but only the figure of the path. Like drawing with lights in a time-exposure of a still image, the light is seen as a path, which path might be the image of yet another bird.

Through the ability of the camera to stop and start anywhere anytime, while the continuum of natural events goes on, a contradiction may occur to our natural associations. A figure may bound from one end of the room to the other, we transit from Springfield, Oregon to New York in one instant, a life-time may be recorded by selecting out significant

events and putting them together in an hour film. The motions can be made faster or slower than our associations, or the whole film may be projected in reverse, showing the splash spring forth a figure, feet first, soaring into the sky onto the diving board. Through such means, we can contradict natural succession. The ILLUSORY nature of motion picture is precisely what makes it a suitable media for the ideograph. As we have seen before, the ideograph is not itself in natural succession. In motion picture, Marlon Brando is not tangibly up there on the screen, and his head is not really fifteen feet high. The natural succession of thought process through images is contradicting the natural succession of tangible events.

In animation, the association of tangible objects is constructed from GRAPHIC images drawn. In continuous motion picture taking, the light behaviour on the tangible objects is being recorded directly through the PHOTOGRAPH. Animation consequently, has its origin more directly in the image, while continuous motion-picture takes its image from light on tangible objects. Perhaps, then animation is closer to the reconstruction of nature by association. Nevertheless, both have their origin in IDEA if there is any idea to be communicated; consequently either may be employed as an ideograph.

4. Mind the Definer.

The sequence of the agency would not be complete without the agency which makes sense of all the others. This sense-maker is little understood perhaps in its specific operations taken in parts, but we do know that it comprehends levels of wholes. Otherwise recognition of an event would be impossible for the parts converging with other parts is but an undifferentiated turmoil. If we imagine identical particles whirling everywhere, then what can we say we have seen? Even such a nothing, the mind would possibly put into wholes whether the particles are whirling in regular, equi-distant patterns or in irregular patterns.

The ideograph demands from the mind as a sense-maker more than any of the other senses since it is the nature of the mind to associate wholes which are perceived through the other sensorial windows we have to the outside world. Through the contradiction that makes perception possible the parts do not predict the whole, the mind, as sense-maker feeds back to the other senses associations which were unpredicted by the isolated visual response, the touch, the sound, the motion. It is by such a contradiction (contradiction, meaning the word spoken against the word which simultaneously completes the initial word...the antithesis of incoherence) that the ideograph is possible as a communicative tool.

To get a picture of the nature of the ideograph we can view it in context with a total sequence of statements about definition. This is all the mind can do is define (find the finite). Put in other words: the mind measures the boundaries of what it confronts, or the mind finds the size of an event by its structural order. However you word it, the mind comprehends finite WHOLEs, and the specific definition is in the

specific finiteness of a particular event. The largest sequence of definition I can find in my own finite mind is:

THIS.
 THIS IS NOT THAT or THIS & THAT.
 THIS 1 is to THAT 1 as THIS 2 is to THAT 2.
 THIS STANDS FOR THAT.

Applying mathematical terms to this set of statements about definition, we can say: UNITY or ONE

TWO DISCREET MAGNITUDES
 (This from that...sub-
 traction, division),
 (this and that...addi-
 tion, multiplication).
 RATIO or PROPORTION
 INVARIANT EQUATIONS.

In musical terms, perhaps it would read something like:

tone
 interval
 MIMICRY OF SOUND: like hippo's walk, bird's song, running water.
 TOTAL FEELING by the use of tone and interval.

In language it is perhaps more complex because the associations are a part of every phase. The letter of the alphabet is itself an associative figure. Alpha, standing for the ox, aleph in Hebrew, for the bull; the letter A itself is an upside down picture of an ox-head. The word, composed of letters again is only functional (except as a sound or visual mark without association) because of its ideographic character. We make an agreement in our society that the marks: ELEPHANT stand for a four-legged creature of thick skin and great size for an animal. The sentence must include (either by inference or literal inclusion) an agent (often called subject), action (verb), and object, to have completion. The consequence of these in order creates a new whole which is the original meaning of the complete sentence. And the sentence, being

a part of a paragraph, has an order which gives associative meaning to that larger total. Therefore we cannot begin with the letter as THIS, except the letter as the simple mark on the page or the sound in the ear. This we will call sign. The sequence might read:

SIGN.

SIGN SEPARATE FROM SIGN: SIGNAL SEPARATE FROM SIGNIFIED.

(visual) PICTOGRAM - (audial) ONOMATOPEIA.

WORD.

And this again on another level:

WORD.

WORD - INTERVAL - WORD (phrase or sentence).

SIMILIES.

METAPHOR.

Similie in this case exists on the level of one association being like another, as this whole sequence is highly associative.

In the visual arts, one can present many analogous sequences which are on different levels of perception just as in language. The sequence might read:

MARK.

CONTRAST OF TWO MARKS.

SIMILARITY OF MARK TO MARK OR MARK TO WORLD.

IMAGE. (mark which stands for something it is not).

In the discovery of experience the sequence is followed through in our language: 1. We make marks. 2. We see the world and notice the contrast between our marks and the world. 3. We see the possibility of making the marks like the world. After much imitation of other people, behaviour of animals, etc., we begin to realize that our imitations are not what we are imitating. Soon we find animals and other people mimicking us. Then we realize that what we are making is 4. a prototype of nature, the marks have their own world of meanings, and is not simply

a likeness to nature. Then the map is not only of the territory, but the territory of nature is changed by the nature of the maps. Humour, wit, mimicry, sharp pictures bring us quickly to this recognition. Through our agency we transform the marks to fit our needs in relation to how we transform the marks to fit our needs in relation to how we see the world. In this way man does not invent language. In nature there is a constant transference of energy, and this energy is transmitted through man and his prototypes. Thought and its temporal causation had to find structure.

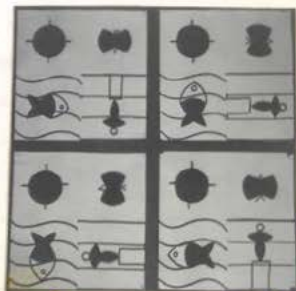
On another level again:

DESCRIPTIVE IMAGE (literally about itself)
 CONTRAST OF IMAGE AND WORLD.
 IMAGE SIMILAR TO WORLD--MAP.
 IDEOGRAPH. (Image with similarities to world, but itself a world of associations.)

Note that all of these examples are of one kind of measuring stick or another (a language with which to structure the world). Therefore, our academic, somewhat arbitrary if conventional divisions of philosophy, biology, physics, psychology, history, etc., must use one or the other of these measuring sticks for the information it deals with.

The use of sound to measure intervals, and of forming "figurative" and associative events is a discreet language by nature of its ability to measure duration, which is most associative of feelings. Although mathematics can do this also, it does not do so literally, and is dominantly a language for the measurement of magnitude changes, or quantification of events. Thus it deals with unity and how it varies its magnitude under conditions of addition and subtraction, etc. The visual arts give definition to the world by measuring the boundaries of a picture

instantaneously. The eye most clearly measures the wholeness of the world all at once. Since the mind coordinates the information all the other senses feed in. The language of the word is perhaps most comprehensive. For it is itself almost nothing (ink on the page, strange squeaks and rumbles), but that which it stands for is a complex manifold. Every word has an audial and visual equivalent, but the image and sound of it is not what the word is about. The meaning is in the metaphorical content. Therefore the word measures the world by being a small totality which refers to the large totality of the world. It is most ideographic, along with the visual image. And yet we blunt our comprehensions often by trying to whittle the word down to a specific meaning. The more associative it is allowed to be, the more comprehensive and discreet simultaneously. For when we say DOG, we know the object it refers to, but to associate: BEGINNING, POTENTIAL, YOLK, YELLOW, SUN, STAR, SEED, GERMINATION is to compound the character of a simple event which chickens occasionally lay. It brings to us a unity which is on another level than that simple day to day event.



C. Process: Film-Making.

1. Geometric Units and Working Drawings.

The process of the film is its history in the making. Making a film is something like, single-handed, designing and building a house, complete with wiring and openings for light, tubes for the in and out of water, air circulation considerations through the partitionings for compartmented activities, etc. It is a complex coordination.

I began with a visualization of the imagery. Before even working with the vector equilibrium as the visual model for unfolding into complexes, I had images in my mind of the natural succession of cell division, the formation of embryos, and the gradual development of creatures; and these in turn being analogous to other growths. But once the visual model was found in the vector equilibrium, I set to work at once to draw the maps of the concave and convex, the inside and outside, and both views of each the tetrahedron, cube, octahedron and vector equilibrium on cardboard. By cutting these out with an exacto knife in four magnitudes, I worked out a means of folding each of the edges of each stencil so that it could flex any number of edges. Each stencil had a special problem. For the convex units had edges which converged at a vertice which needed an omni-directional hinge, and the concave units had edges which hinged in one way only. The insides of view I. had to hinge omni-directionally six edges at one vertice, while the insides of view II. pivoted from a center. These ways of joining edge to edge naturally suggested the wing flap of birds, the wags of a fish's tail, the turning

of an owl's head, the joining of flowers and leaves to a stem. At this point I could easily have made mobiles or tactile-movies instead of a film. But the film offered the greatest promise of communicating the most meaning with the least material means. The ideograph was still the most efficient way I could see to present the idea, by making the material minimal.

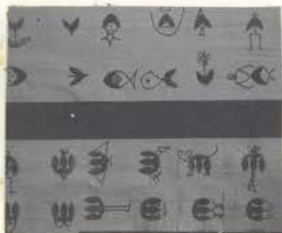
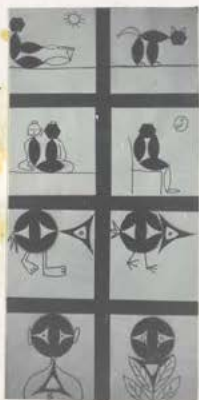
The four magnitudes of the stencils are:

	I.	II.	III.	IV.
F. (inside tetrahedron. view II)	1 1/3"	2 2/3"	5 1/3"	10 2/3"
E. (outside tetrahedron. view II)	2"	4"	8"	16"
D. (cube, octahedron, outside, view I)	2 1/4"	4 1/4"	9"	18"
C. view II. (cube, octahedron, tetrahedron. view I)	2 4/5"	5 3/5"	11 1/5"	22 2/5"
B. (inside view I. vector equilibrium)	3 1/2"	7"	14"	28"
A. (outside both views vector equilibrium)	4"	8"	16"	32"

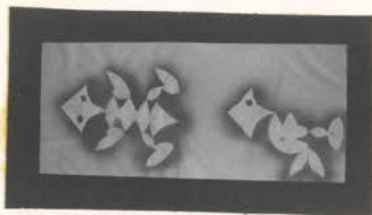
Notice that the outside tetrahedron (view II) is in each instance the same size as the outside vector equilibrium. The beginning of one magnitude is the ending of another.

After completing all the stencils, by cutting, hinging with tape and rubber bands, and shellacking to prevent water paint absorbing into the cardboard, I tried to think of the cheapest, yet workable paint to

to spray on acetate. It is likely that thinned oil paint would have been better, but I committed myself to poster paint mixed with an acetate binder very early in the process. I then sprayed, dominantly magnitude I and II and III in white, black, yellow, blue, red and green both as whole units, and each unit with five edges, four edges, three edges, etc. If I had any of this to do over, I would work on a smaller scale, and use transparent material originally, and cut directly from that.



Once I had the six colors on acetate I could play with the units on a contrasting field and let them suggest to me the metamorphosis I had responded to in nature. From long hours of this kind of game, I found the small concave equilateral triangles suggested fish heads, vertebrae, and many units connected in discreet ways suggest craw-dads and lizards and creaturs which have never walked the earth.



2. Working Tapes

The sound order is largely an exploration in simple sequences, repeating in discreet ways. Although the film as a whole is but a beginning of an order, working from the simple idea to the manifold patterns, the sound is least developed. Nevertheless, the problem has opened up a way for a non-musician to construct sounds, by the use of a simple structural strategy and the tape-recorder.

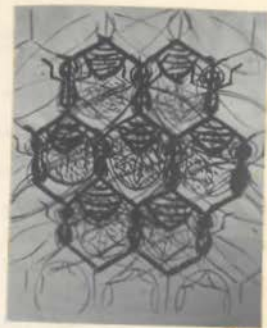
In sound as in image I worked from both ends, that is, beginning with an association and reconstructing it in sound or beginning with a sound and associating it, with the duration pattern of a crawl, of a spiralling nebulae, of orbiting, etc. As discussed previously, I built the structure of the sound out of the isolated, repeated or alternate, overlapped and countered motions of motifs. It is based on the octave, since the harmonica I used is a 64 tone, containing four octave in the harmonic and chromatic scale. Each sound pattern was taped, then I played along with the recording while recording both. This then was played at 1/2, double, or normal speed and played along with and recorded again, etc. In this way, counterpoint is possible for one individual.

3. Continuity Visualization.

Finally, the imagery was worked out in an order of cycles on the level of the geometric unit with all of its properties: color, size and concavity and convexity, position of each unit in relation to others, and direction of movement. The microscopic, plant and animal, and astronomical levels were associatively worked out. This was drawn into a

book form, as thick as it is tall, showing the particulars from sequence to sequence. The duration, counting 24 frames per second, was imagined by timing with a second-hand how long it takes for a snake to wriggle across the screen or bees to transform into flowers. This was then marked in each page with the number of moves for each image drawn and the number of frames per each move. Although I did not follow my orders totally, I made each stage of the process as flexible as possible for discovery. Gradually the total conception became more fully realized.





C. Process: Film-making

2. Insert: Working Tapes contd. and Sound Striping

Since the sound has only just been magnetic striped after the advent of the writing of this paper, it is necessary to use this insert. After recording the harmonica "motifs", and the voices, I visualized more precisely the mutual support of the sound and the visual sequence. This was still very flexible, when coming to the problem of sound striping. In this part of the process of the film, it was necessary (as it would have been useful in the animation recording) to have a co-worker who understood and could deal with the mechanics of tape-editing, recording, in all its details.

Don Hundter, of the Audial Visual Department spent many long hours, not only helping with the mechanics, but participating in the total effect of the sequence by being a sensitive receiver himself.

After conceiving and trying many possibilities for each section, a counterpart was gradually found for the visual continuity.

The verbal sound scripts

Perhaps it is in the smallest sign that the complete picture lies.
We must know how to read.
The universe is very simple but there are many folds.
The map is creased over and over again.
How to fold and unfold the mani-folds?
The molecule is the fold of the atom.
The worm has many more folds than the protozoa.
The fish, the reptile, the insect is mani-folded.
The folds are complexes.
The human complexes are in the folds of the brain.
Looking like parts serving and being apart.
Looking like parts taking and being taken.
Wholes filling and holes emptying.
Going through these phases and coaling out some other side.
The waxing and waning of the gibbous and crescent are phases of the moon's face.

The sun spies.
The sun is an eye piercing our faces and phasing the unfolding.
It burns until our image is burned out and we can see in.
The sun is SOL.
The solstice is the point at which the sun seems to stand still.
The solitary SOL is the sun-still.
The saggle point of vision.
The sun sings a solo and the earth is orbiting.
To sing singly is to see solely, to see the old soul, the new SOL, the always now sole simply seen.

Fluid ice is the flame of rock.
Like colliding balls, have you seen the sun meet moon?
Each has its path without war.
May the collision of the comet and star bring forth a radiant birth not yet seen? Spiralling into a structure, what is the potential of each to each?
The earth is perhaps a large egg which the seeds of the fruit penetrate to spring forth a purpose from the plants rooting and shooting up again and again.
And the egg but a planet spinning in space, waiting for the penetration to begin the spiralling embryo into larger orbits until it breaks through the shell and flies away.
And perhaps the mind can penetrate it all and cut more precisely and with more sharp an edge than the smallest particle of energy breaking through the walls of a volcano. And the outgrowth of such a cut will be controlled by knowing rather than eruptions.

Though each in his own skin is small, each may sense the large.
Some think the onion can be known by peeling off layers, but when all
Is peeled there is nothing left.
Others think the onion can be known by looking through its transparent
skins, but when it is penetrated there is but the other side of the
onion.
Some study the genetic structure of the onion because it holds the code
of the whole onion, but the genetic structure is not the onion.
Others paint the surface of the onion, still others paint its image on
yet another surface; but then the paint is not the onion nor the
image.
Some will write an onion poem, but the poem exists only in the mind.

Says the fish to the lizard: If the waters dry up I will sprout stumps
and feet from my fins and crawl the earth.
Says the lizard to the bird: If the cats keep killing my kind, I will
make my scales feathers and my legs wings and take to the sky.
Says the bird to man: If I cannot fly to the stars to view the world I
will give up my wags and pull out my feathers and grow in my skull
an eye sharper than the dart of my flight.
Says man to the fish: I see I will have to watch you more closely next
time.

I have seen a bird standing still, but have you ever seen a tree walking?
The journey of the tree is the seed catching, latching and falling, the
key to the tree being a tree.
Into the earth it sinks and out into the sun it bursts from the root of
it, and climbs from it, into it; the flower and sun are one.

Is not this earth which gives birth again and again to the flower, a
coiled dust particle from the arm of that spiralling galaxy?
And from what finger is the galaxy?
And from where can we view it?
Clockwise it spirals from here, but from the other side spiralling
counter.

Is there a direction to this convoluting, evolving or does atomic dust
return to atomic dust?
Are the stars an alphabet we put together to help us read the things
we know or holes in the blanket of the sky?
Are flowers struggling for the sun simply to fall back into the earth
again, or are some there for bees to build a sweetness which in turn
is taken though neither flower nor bee is knowingly living for the
giving?

Have you ever seen the moon pass for a flower?
A plate full of peas, the seed of the earth?
Or orbiting by, the moon kissing the tips of the petals before it sinks
behind the horizon?

Why is it we never see the moon, black against the daytime?
Is the other side of the moon faithfully faceless?
Is the moon a mere echo of the sun, a din from the dinning?
Is it holding in its face the golden trumpets, one blare from the
brass, and councing it back again, radiant, these waves of
trumpet calls? Only the moon knows...for the sun knows itself
through the faint echo of the moon.

Cells multiply and divide without learning a whit of arithmetic.
These in turn part into arms and wings and combine into joints.
Atoms within bones, atoms within flesh, what is all this fision and
fusion?

For this to part it was once one.

Now one it may part.

No many it may unit again.

The creatures get more tight in their mani-folds the more you unfold
them.

A link is a ring of a chain, an age is the chain of a ring of seasonal
cycles. Linkage is the cycle of each life-ring.

The world is the puppet of man, but it will not perform if we do not
recognise the equality of each to each.

My pull is your push. Inertia?

Is the world one great energy?

Or is it many things, each with its own skin?

Perhaps it is but a process of comings and goings?

Or is the world the impression it makes on my senses?

Is all this so many links in the chain of time?

And is time a process always changing or the still point from which change
is measured?

Does spring come before winter time?

Have you ever seen the flower burst into bud after fall, and then break
into ice?

Have you seen an apple rot before it was green?

What is the order of what you have seen?

4. Camera.

USING a 16 MM. Bolex and zoom lens in a small room, I needed to position the camera at least 7 feet away from the figures since this was the shortest focus range for the zoom lens. The camera tower was built very quickly by Bryan Ryan at the Height of over 9 feet. The ceiling was 9' 6". There was just room for the camera to be screwed off center from the vertices of the four legs of the tower. There was a foot and 1/2 for the support for the plate glass on the floor.



The four lights converging from the four points of the compass gave reasonably uniform lighting conditions. The colored fields from which the colored acetate figures would contrast were slipped under the footing of the "animation crate". From then on, it was not hard

work, but the idea is very simple. All that was needed in the process was the LIGHT as a source of illumination for both the FIGURATIVE INTERFERENCE and the FIELD INTERFERENCE, and an eye or CAMERA to record the SEQUENCE. The camera itself is but an eye which is capable of sustaining its image in a materialized form. CAMERA = IRIS, SHUTTER SPEED, LENS, FILM SPEED. Light being the origin of this mechanics.

AFTER taking a light reading, both reflected and incident, I fixed the F. stop at 2.8, the iris being at 30th of a second, and the film speed ASA 16. From the lens to the plate glass on which the figures would move, was 7'3".

I drew squares an inch apart on the plate glass in order to modulate the black pieces of cardboard I used for the frame of reference. This changed scale from a square of 32" to 2" or total darkness in co-ordination, theoretically, with the modulations with the zoom lens.

Other modulations which took place were filter changes which I slowly marked down to F. stop 2.4. The camera and lighting didn't allow much leeway for dark filters, but the yellow, orange, red, red-violet are perceptible through the seasonal cyclic changes. The filters were made with gelatins sandwiched between glass.

I worked the animation from the floor, by using a four-foot cable-release; and a step ladder to step ladder plank for scaffolding to check the viewing, to wind, load, and unload the camera.

PART II. THE IDEOGRAPH OF NATURE: METAMORPHOSIS

IV. Expression: Metamorphosis

The question now is: is this film an ideograph of nature: Unless it passes the test of this question, we must begin again.

If the ideograph is a manifold of associations, each fold of which is discreet in its character; and the total idea resultant from this manifold is itself a new entity, being unpredicted by the sum of the parts, then we can begin to see how the film does this. Breaking it apart will not lead us to the ideographic nature of it; putting the parts together through its observation can.